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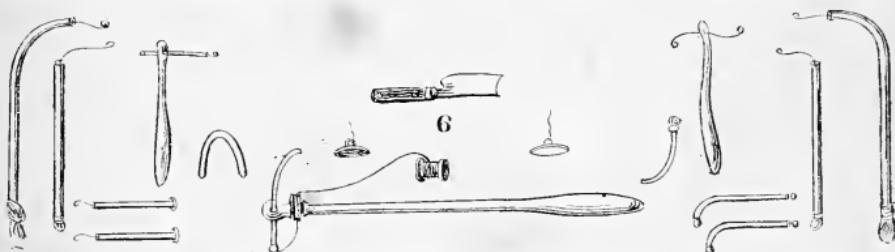
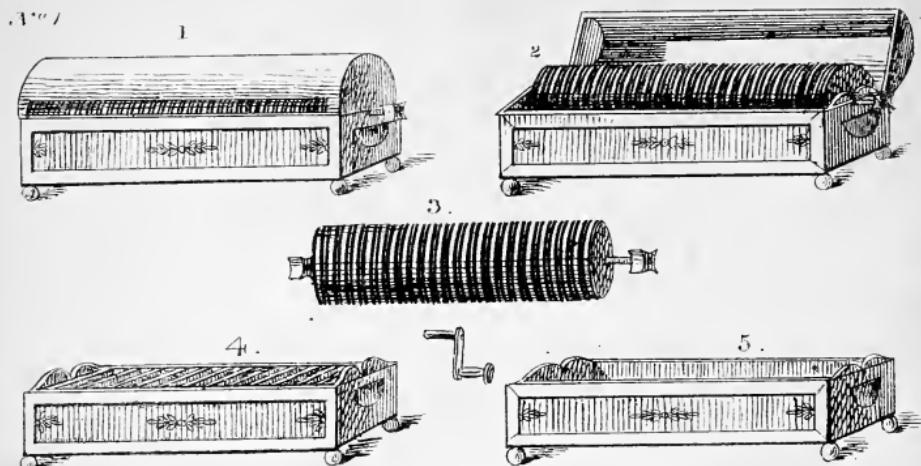
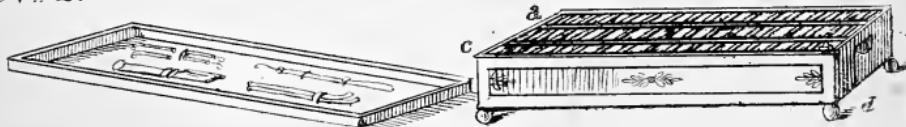
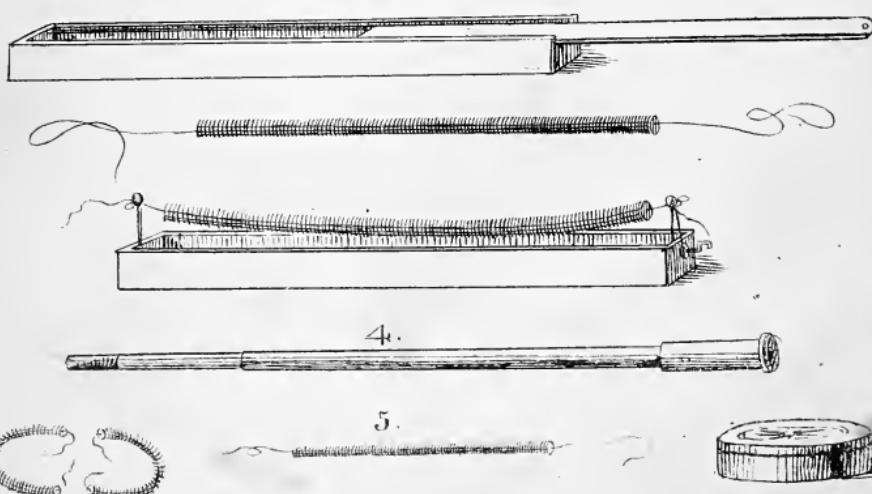




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N<sup>o</sup> 2.N<sup>o</sup> 3.

ON  
**GALVANISM,**  
WITH  
OBSERVATIONS ON ITS CHYMICAL PROPERTIES AND  
MEDICAL EFFICACY IN  
**CHRONIC DISEASES**  
WITH  
PRACTICAL ILLUSTRATIONS;  
ALSO  
**REMARKS**  
ON SOME  
**AUXILIARY REMEDIES.**

---

*WITH PLATES.*

---

**BY M. LA BEAUME,**

Medical-Galvanist, Surgeon-Electrician, Consulting Ditto to the London  
Electrical Dispensary, Gratuitous Electrician to the Bloomsbury  
and Northern Dispensaries, F. L. S., &c.

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**LONDON:**

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**1826.**

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DEC 22 1966

TO

THOSE MEMBERS OF THE  
THREE BRANCHES OF THE MEDICAL PROFESSION

*To whom the Science of Galvanism is indebted.*

---

GENTLEMEN :

Your enlightened views and active benevolence have fostered and matured the science of Medical Galvanism in this country ; and you have enlarged, through my humble instrumentality, the sphere of medical knowledge, by extending the benefits of Galvanism to diseases which have, hitherto, been considered beyond the curative powers of that important remedy.

To you, Gentlemen, I respectfully dedicate the following pages ; and the practical experience, therein contained, will prove the wisdom, the liberality and the humanity of those, whose penetrating minds and generous hearts have sacrificed all selfish considerations to the general good.

To address you here, Gentlemen, individually, would appear invidious, but the time will come when the public shall know their benefactors ; whose names I intend to publish in a work on the “Rise, Progress, and Success of Galvanism in this Country.” The gratitude of thousands will then flow in its proper channel, and the ignorance of some and the selfishness of others will be thoroughly unmasked.

To you, Gentlemen, the merit I may be thought entitled to, as a Medical-Galvanist, is justly due ; for the *multiplicity* and *variety* of cases, which have come under my care, could never have been obtained without your recommendation.

With respect and gratitude,  
I subscribe myself,  
**GENTLEMEN,**  
Your obedient Servant,  
**M. LA BEAUME.**

31, Southampton Row ;  
Sept. 20th, 1826.

## P R E F A C E.

---

IT was my intention, at the commencement of this short treatise, not only to give a concise view of Galvanism, as a philosophical agent and a curative power, and to illustrate its medical properties in various maladies comprehended under the generic term of *chronic diseases*; but also, in an appendix, to enter more fully into the history and mode of treatment of various cases in the worst stages of chronic disease, which have come more immediately under my care. However, as I proceeded in my undertaking, from day to day, while the manuscript was written for the press, the work increased so much

in size, that I have determined, by the advice of my professional friends, to substitute three plates and the following article on digestion, etc., for the appendix, which would have too much enlarged the size of the book, thinking that they will prove more acceptable to the scientific and intelligent reader. I intend to publish a statement of cases, occasionally referred to in these pages, in a separate pamphlet for the perusal of those invalids, who require not the *philosophy of facts* but the *facts themselves* to support their desponding hopes, and to point out to them the means of obtaining relief and recovery from diseases which may be considered incurable by the ordinary means of treatment. As many intelligent readers may be unacquainted with the anatomy and physiology of the abdominal and thoracic viscera and the important functions

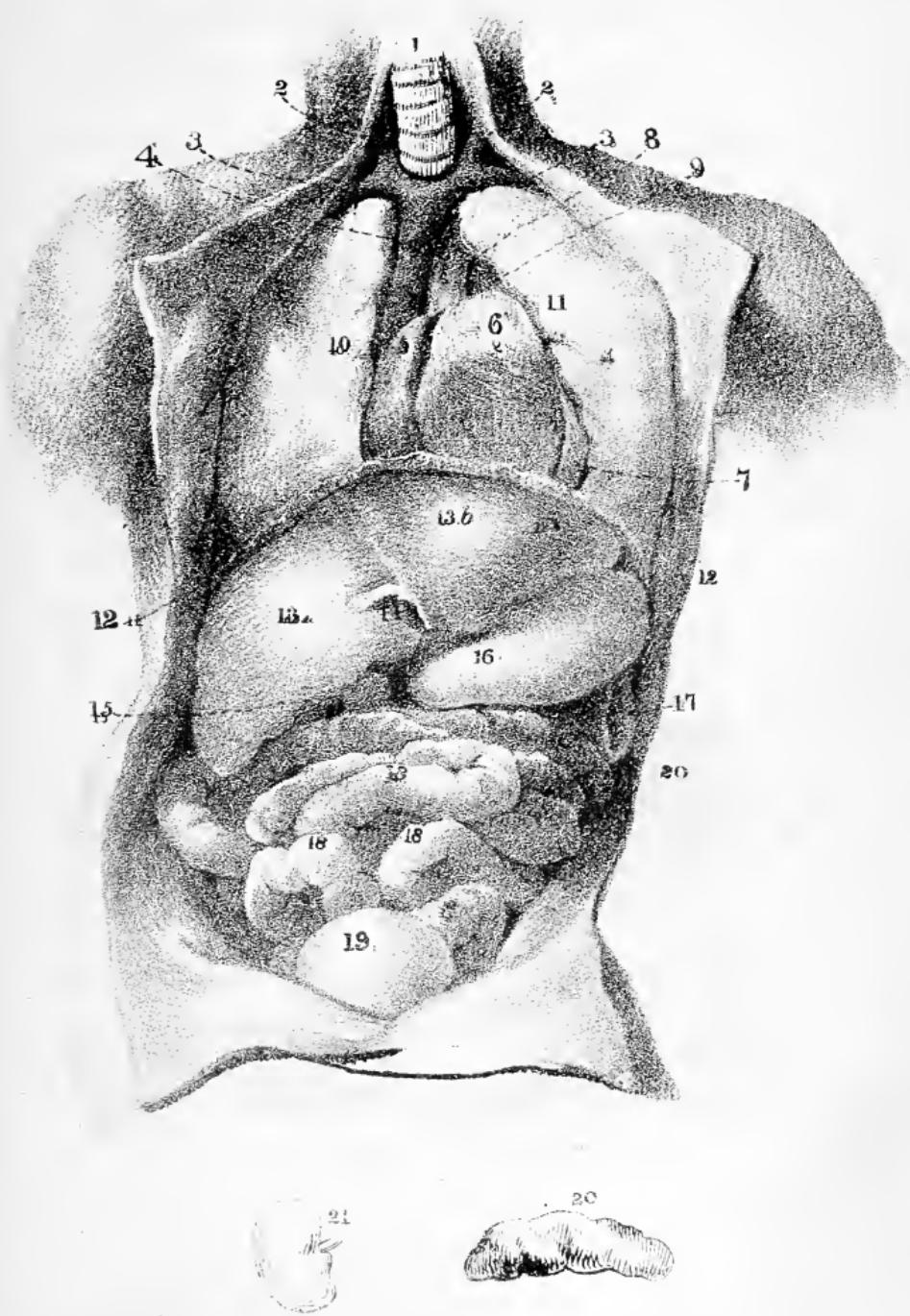
of those organs, I beg to present to their view the annexed plate and a description, with a few observations on the digestive and other functions of vitality ; as my practice is not, like that of the mere mechanical operators of Electricity, to palliate the symptoms of constitutional disease by the application of local stimulants, but to attack disease at its source by one of the most powerful medical agents that has ever been employed in the curative treatment of human maladies.

By the description of the plate the invalid will be enabled to ascertain the relative situations of the different organs of digestion ; and may, in some degree, perceive their inevitable sympathy and the mutual connection that perfects the transit of the Galvanic fluid.

## REFERENCES TO PLATE 2.

1. The Larynx.
2. The internal jugular vein.
3. The subclavian vein.
4. The vena cava descendens.
5. The right auricle of the heart.
6. The right ventricle.
7. Part of the left ventricle.
8. The aorta ascendens.
9. The arteria pulmonalis.
10. The right lobe of the lungs, part of which  
is cut off to shew the great blood-vessels.
11. The left lobe of the lungs.
12. The diaphragm.
13. *a, b*, the right and left lobes of the liver.
14. The ligamentum rotundum.
15. The gall bladder.
16. The stomach pressed by the liver toward  
the left side.
17. The spleen.
18. The intestines.
19. The bladder.
20. The pancreas,      } Behind the liver and
21. One of the kidneys, } stomach.

## THE THORACIC AND ABDOMINAL VISCERA.





## ON DIGESTION, ETC.

---

THE healthy state of the organs contained in the abdominal cavity is essentially necessary to the maintenance of animal life. The aliment being received into the mouth is there masticated and impregnated with saliva, which is pressed out of the salivary glands by the motion of the jaw and the muscles that move it and the tongue. It is then forced over the small aperture, called the epiglottis, into the pharynx or gullet and then into the stomach ; here the first process of digestion takes place. The various kinds of food are assimilated by the previous admixture of saliva and the gastric juice of the stomach,

supplied by the glands of its inner coats ; whose natural heat and vermicular motion co-operate in healthy digestion in the first passage. This process being completed, the concocted mass, now called chyme, is forced out of the pylorus, the right and lower orifice of the stomach, into the first of the small bowels, called the duodenum, where the second process of digestion is performed. The liver and gall bladder now come in aid of this operation, and the bile, which is contained in the gall bladder, previously transmitted from the liver and the pancreatic juice, and, as some suppose, a fluid from the spleen, pour out their contents into the duodenum and mix with the chyme and dilute and attenuate it still more for both nutritious and excrementitious purposes, and so alter its character as to acquire the name of chyle. This pulpy substance is continually moved

and forced onwards, from one portion of the intestines to another, by the motion of the bowels, called the peristaltic action; and then by the compressing power of the diaphragm and the muscles of the abdomen into the second intestine, called the jejunum ; thence into the third, called the ileum or the small bowels ; and then into the colon, which is the first of the large bowels ; and by the cœcum into the last, called the rectum ; and thence to the outlet of the intestinal canal.

Along the course of the bowels are situated the small glands, called the lacteals, from their receiving the thin and milky part of the chyme from the small intestines, which they convey into the *receptaculum chyli*, or the receptacle of the chyle; whence it passes through the *ductus thoracicus*, the thoracic duct, into the left subcla-

vian vein, where it mixes with the blood and passes with it to the heart through the veins, and is received by the right auricle of the heart. The blood is then propelled from the right auricle into the right ventricle of the heart, which forces it through the pulmonary artery into the lungs ; thence it is conveyed back by the pulmonary veins to the right auricle of the heart, and from that into the left ventricle, by which it passes into the aorta, and is distributed through the entire body. From the extremes of the arteries arise the veins and lymphatics ; the veins to collect the blood and bring it back to the heart, and the lymphatics to return the lymph or the thinner part of the blood from the arteries to the veins and the vasa lactea, where it mixes with the chyle, and then passes with it into the left subclavian vein and thence to the heart.

The various fluids which we drink pass from the stomach into the intestines, and are carried into the blood-vessels; and the greater part are separated by the liver, kidneys and skin, and are carried off by perspiration and by alvine and urinary discharges.\*

In the thoracic viscera, which is divided by the diaphragm from the abdominal viscera, are seen the heart and the lungs, by which circulation and respiration are carried on. The heart is situated in the middle of the breast; its cone inclines a little to the left and is loosely inclosed by a kind of membranous covering, called the pericardium.

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\* See Cheselden's Anatomy, page 216.

The lungs consist of two great divisions, called the right and left lobes ; each of which is again divided into two other lobes. This important organ is also divided into many cells, which are the expanded branches of the trachea or wind-pipe. The upper portion of the wind-pipe opens into the mouth, and the lower portion which divides into two branches and expands in various ramifications is called the bronchia. All these canals and cells are essentially connected with the lungs. The larynx, which is the upper end of the wind-pipe, divides and enters the lungs at the fourth vertebra of the back. The pleura is a fine membrane, which lines the whole cavity of the thorax except the diaphragm, and the mediastium divides the thorax lengthways from the sternum to the pericardium and pleura. The circulation of

the blood is carried on by the arteries and veins and by the two-fold motion of the heart, called the systole and diastole.

Respiration is effected by receiving the air into the lungs and then expelling it, the muscles of the thorax and the diaphragm administer to this important function of vitality, though the diaphragm only has been supposed to perform the offices of respiration in a healthy person, who is at rest. The powers of expiration are ascribed to the muscles of the abdomen. The secondary uses of respiration are many; it is by this force that the abdomen, with all its viscera, is continually compressed; by virtue of this, the stomach, intestines, gall bladder, receptacle of chyle, bladder and rectum, and the womb itself, discharge their contents; and by this action the aliments are principally ground

or dissolved, and the blood is urged through the sluggish vessels of the liver, spleen and mesentery. By inspiration the air is mixed with the aliments, which it conduces very much to break and dissolve towards a perfect digestion.\* I might pursue this subject farther, and not only shew that the nervous power is dependent on digestion and sanguification, but that muscular energy, sensorial and intellectual perceptions and capabilities, and even the principles of life, altogether rest on the broad basis of healthy digestion.

On even a superficial view of the internal organs of the body we must be too forcibly struck with their wonderful formation, arrangement, connection and dependance, not to discover how important

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\* Haller's Physiology, vol. 1, page 251,

it is to pay due attention to those means which are necessary for the preservation of health, strength and spirits.

If we observe the form and capacity of the stomach, which organ has been called the centre of our sympathies, we shall be particularly careful not to distend it by an immoderate quantity of food, which impedes the action of the heart and obstructs the circulation of the blood in the descending artery and determines it to the head. If we considered the operation of digestion carried on in the second passage, and the quantum of biliary secretion for nutritious and excrementitious purposes which is supposed to be about eight ounces in twenty-four hours, in order to the digestion of an adequate quantity of wholesome food, we should not destroy our digestive capabilities by taking an excess of food,

or any food that is unwholesome, which cannot be easily formed into good chyle, but occasions an accumulation of fæcal matter not easily carried off by the natural purgative of the body, the bile ; which is retained in the gall bladder, like a medicinal draught in a bottle, till it is required to be poured out. When we reflect on the length and capacity of the intestinal canal, which, according to Cheselden, is, in persons of middle stature, in the proportion of five to one of the length of the body, or about five yards long, and when we reflect that a large portion of excrementitious matter may be retained in this canal and within its foldings, we must see the absolute necessity not only of moderation in diet, but also of daily exercise to aid the peristaltic action of the bowels, and to promote the regular and adequate performance of the last

office of the lower intestines ; without which disease must be engendered in the alimentary canal ; and thus the food that we eat by its clogging up the wheels of life may poison as it feeds. A proper regard will also be paid to the quantity and quality of the various fluids we drink, which are necessary to dilute the solid food, quench the thirst, and keep up the vital energy of the system ; without proper attention to these important considerations we are liable to impose additional labour on the absorbents, the kidneys and the bladder, and thereby weaken the tone of those organs and produce disorder in the system and premature decay.

A view of the thoracic viscera also affords us admonitory instruction to guard against the vicissitudes of atmospheric changes by the use of proper clothing,

by breathing the invigorating air on all occasions, and, above all, by maintaining the healthful action of the heart and arteries by regular and moderate exercise, without which we cannot preserve health any more than we can maintain life without food or drink.

To counteract the effects of accidental derangement of the human frame, and the natural tendency to decay and death, the preserver of human life has ordained that various substances from the animal, vegetable and mineral kingdoms should become the medicinal means of restoring health and prolonging life. These remedial substances, elaborated by a scientific process into various drugs and chymicals, are administered to the sick by the healing art ; experience has, however, shewn that they sometimes prove abortive, from their

want of medicinal energy in desperate cases of disease and not from want of skill in their exhibition. Their *modus operandi* is confined to certain organs only, and therefore before they reach the seat of disease they lose the full force of their medicinal virtue : but the remedy that more immediately applies to the vital principle, without the intervention of numerous organs and their combined operations, is that which now claims the attention of the reader. The elementary principle in man, called the nervous fluid, has by many philosophers been considered as having the strongest affinity to the Galvanic fluid, from the resemblance they bear to each other in influencing the processes of digestion and respiration. Be this as it may, my design is now to shew, whatever may be the opinions entertained on the subject, that the Galvanic influence is a remedy

of vast importance in chronic disorders of the abdominal and thoracic viscera and the nervous system, and also in the derangement of the sensorial and intellectual powers, in which the ordinary remedies, how judiciously soever administered under the most favourable circumstances, often disappoint the reasonable hopes of both the practitioner and the patient. To this extraordinary remedy, therefore, I call the attention of the medical profession and the intelligent public and submit the following pages to their candid consideration.

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Plate 1.

**THE FRONTISPICE EXHIBITING FIVE  
PORTABLE BATTERIES**

Plate 2.

**THE THORACIC AND ABDOMINAL VIS-  
CERA. See *Preface*, page viii.**

Plate 3.

**A VIEW EXHIBITING THE ADMINIS-  
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## ERRATA.

Page 94. l. 11. *for annasarca* *read* anasarca.  
100. l. 19. *for mysenteric* *read* mesenteric.  
108. l. 3. *for retrocedent or misplaced* *read* retrocedent.  
119. l. 5. *for varcocele* *read* varicocele.  
154. l. 22. *before* the privation—*read* Anosmia.  
156. l. 6. *before* the diminution *read* Ageustia.  
156. l. 18. *before* the feeling *read* Anæsthesia.  
157. l. 3. *before* paracusis *read* dysecœa.  
253. l. 2. *for* four *read* three.  
256. l. 2. *for* No. 2 *read* No. 3.  
257. l. 14. *for* man *read* woman.  
258. l. 12. *for* Pedeluvium *read* Pediluvium.  
258. l. 15. *for* pied *read* pié.  
267. l. 24. *for* Cuthberton *read* Cuthbertson.  
268. l. 15. *for* Rend *read* Reid.  
268. l. 22. *for* Robertson *read* Roberton.  
268. l. 26. *for* Sanders *read* Saunders.

## INTRODUCTION.

---

ABOUT seven years ago, I published my "Observations on the Properties of the Air-Pump Vapour-Bath in the Cure of Gout, Rheumatism, Palsy, etc.,," and subsequently my "Treatise on the Medical Efficacy of Electricity in Chronic Diseases, with *occasional* Remarks on Galvanism;" when I announced my intention of giving a concise view of Galvanism, and its medical utility, in a separate volume; but I have been so fully occupied, since, in professional duties, that I have not been able to accomplish my purpose till the present moment, though I have been urged to the undertaking by numerous applications for the work.

The following pages give a brief sketch of the history, philosophy, and medical efficacy of Galvanism, and will enable those, who are unacquainted with its extraordinary powers, to form a correct idea of its chymical properties and medical utility in a certain class of human maladies, termed chronic diseases. As there exists, even in this enlightened age, a great prejudice against all remedies not used in common practice, I purpose to shew that Galvanism is not an *empirical* or *useless nostrum*, but a *powerful agent*; and, when judiciously employed as a curative process, is capable of producing the most beneficial effects.

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CONCISE VIEW  
OF  
**G A L V A N I S M.**

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The SCIENCE of GALVANISM is a branch of natural philosophy ; and the Galvanic fluid or influence is that species or modification of Electricity which is developed by chymical agency. ANIMAL or METALLIC ELECTRICITY was first accidentally observed by the wife of Galvani, Anatomical Professor at Bologna, in 1791. Some frogs, recently skinned for cooking, were casually lying on a table near an Electrical machine in the laboratory of the professor. After the apparatus was put into action, an attendant unintentionally touched with the point of a scalpel the crural nerves of the frog, that was nearest to the prime

conductor, when the muscles of the limb were instantly thrown into strong convulsions ; this remarkable circumstance the wife communicated to her husband, who repeated the experiment with the same result, which appeared to confirm the hypothesis he had previously formed, that muscular motion depended on Electricity. This ingenious man subsequently made many experiments on frogs, from which he concluded that there is in all animals an inherent Electricity, capable of exciting muscular motion on the application of dissimilar metals to different parts of the body. Hence the science of animal or metallic Electricity, as well as the fluid, is called after his name. Soon after Galvani had made known his discoveries, several philosophers, among whom were Valli, Fowler, Fabroni, and others, prosecuted their inquiries into this new phenomenon. Their researches confirmed the important fact, that Galvanism possesses a peculiar power in exciting the nerves. Sultzer, a German writer, was the first who noticed

the effects, which two dissimilar metals have on the tongue, when brought into contact, and which produce a subacid taste. This discovery evinced the influence of the Galvanic principle on the gustatory nerves ; and, some time after, its effect on the optic nerves, in producing a flash of light, was observed by Fowler. Similar experiments were also made by others with the same results ; and this application of two dissimilar metals constitutes the *simple Galvanic power.*\*

---

\* Those who wish to repeat these experiments may make them thus :—Place a shilling on the tongue and a circular piece of zinc under the tongue, then bring their edges into contact, and the subacid taste will be perceived.—Procure two rods, one of zinc and the other of silver, about the size of a quill, and about six inches long ; place one end of the silver rod to the outer corner of one eye, and an end of the zinc rod to the outer corner of the other eye, then, by bringing the other two ends into contact, a slight flash of light will be perceived. This mode of exciting the optic nerves was recommended by the great Dr. Darwin in the cure of amaurosis or nervous blindness.

The *compound* Galvanic power was the happy discovery of Professor Volta, of Pavia, in 1800, who constructed a metallic pile, which is called after his name. This apparatus, the Voltaic Pile, consists of a series of circular plates of silver and zinc, between which, circular cards of a smaller size, wetted with water, are interposed. By touching the two extremities of this apparatus with the fingers, a shock similar to that of Electricity was felt by Volta; from which he concluded, that Electricity and Galvanism are identically the same. Volta also constructed another Galvanic apparatus, which he called the *caronnes des tasses*: but it did not produce so powerful an excitation as his pile. Though Volta's subsequent observations overthrew Galvani's theory, yet he maintained that the Galvanic influence acted immediately on the nervous system. The experiments of Nicholson and Carlisle, on the Voltaic pile, proved that its two ends were in different and opposite states of Electricity; that the zinc end was positive and

emitted oxygen ; and that the silver end was negative and gave out hydrogen. By this apparatus those experimentalists *decomposed* water, and the gas obtained from it, being mixed with an equal portion of common air, exploded when brought into contact with a lighted thread.

Fourcroy, Vanquelin, Tromsdorf, and others, *deflagrated* the leaves of silver, tin, and other metals ; and Biot and Cuvier maintained that the air itself was deoxidated by enclosing the pile in a small space.

That celebrated chymist, Cruickshanks, of Woolwich, not only confirmed the discoveries of Nicholson and Carlisle, but succeeded in decomposing *neutral salts* ; and he demonstrated that without oxygen no fluid can conduct the Galvanic influence, and that the pile itself cannot act in a vacuum. To this scientific man we are also indebted for that most efficient apparatus, the Galvanic battery ; which consists

of a wooden trough, in which are arranged a series of zinc and copper plates cemented together, and placed perpendicularly at equal distances, forming many separate cells, which, on being nearly filled with diluted mineral acid, develop a powerful stream of the Galvanic fluid. Thus, from the simple Galvanic circle of two dissimilar metals, and the power of the Voltaic pile, increased by the interposition of pure water, we arrive at the immense force of the Galvanic battery excited by a solution of mineral acid ; by which Dr. Henry decomposed the *sulphuric* and *nitric acids, ammonia*, etc., and by which Sir Humphry Davy achieved his greatest chymical exploits.

Passing by the numerous experiments and speculations of continental chymists, which cannot be interesting to the generality of readers, we must now notice the brilliant discoveries of Sir Humphry Davy, which have deservedly acquired for him the reputation of being the first chymist of the age.

In the year 1806, Sir Humphry Davy detailed to the Royal Society the Galvanic experiments by which he obtained oxygen and hydrogen from pure water, and decomposed various earths and saline compounds. From these experiments he deduced this important fact, “*that Galvanism had the power of counteracting and even of changing the effects of chymical affinities.*”

In the following year Sir Humphry Davy stated to the same learned and scientific body, that having decomposed *potass* and *soda*, he found their base to be metallic ; that the alkalis are the oxyds of metals ; and that he had effected a recombination of these alkalis and various earths by the Galvanic power. These surprising communications, and the experiments of continental chymists, induced Mr. Children, of Tonbridge, to augment the Galvanic force by enlarging the surfaces of the plates, and increasing the number of the troughs, on the principle of Dr. Wool-

laston's elementary battery ; by which means he also decomposed alkalis and alkaline earths, *ignited* platina wire, (six feet long, and of great thickness,) and *melted* that metal, as well as osmium and iridium. The large battery of the Royal Institution, which was made about that time, consisting of two thousand pairs of plates, having a surface equal to one hundred and twenty-eight thousand square inches, rapidly *fused* platina, quartz, sapphire, magnesia, plumbago, and charcoal ; and completely *evaporated diamond itself*. Such is the power of that once obscure agent, which was discovered by a propitious accident, and which by the genius of man is made to effect objects in chymistry unattainable by any other known means.

The GENERAL LAWS, by which Galvanism is governed are as follow :—

First : Two dissimilar metals and an interposed fluid, or two dissimilar fluids

and an interposed metal, are necessary for the development of the Galvanic influence. This constitutes the simple Galvanic power; a series of which forms the pile or battery. Sir Humphry Davy observed that charcoal possesses a property similar to metals in forming a Galvanic combination with two fluids; and Galvani, Aldini, and others, have proved, that the nerves and muscles of dead animals can be excited without the aid of metals. That Galvanic combinations may be effected by dissimilar living animal substances and fluids is probable, although we have not yet arrived to that degree of knowledge of animal organization and the principles of life to prove it.\* Some philosophers suppose that the brain itself

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\* "Humbolt proved that contractions were excited in an animal by placing the nerves and muscles in certain situations, with respect to each other, without employing any metallic substance; on this principle a pile was constructed of alternate layers of muscular fibre and brain, separated by a porous body soaked in salt water."

is a species of Galvanic battery, where the nervous influence is generated, and thence, by the conducting medium of the nerves, is transmitted to every part of the body. Others maintain that the nervous and Galvanic fluids are identically the same, (though differently developed,) because similar effects are produced by their influence on the vital functions; and numerous experiments on the eighth pair of nerves of rabbits and other animals would countenance this opinion.\* In my recent experiments to increase the Galvanic power of the battery, I have discovered that a certain portion of quicksilver combined with the zinc plates will very considerably augment its force; although this fact seems somewhat at variance with the laws of Galvanism, as it relates to its excitation by two dissimilar metals.

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\* A most excellent paper, from the pen of Dr. Hastings, of Worcester, giving an account of his experiments and observations on the eighth pair of nerves, was published in the Journal of the Royal Institution, about two years ago.

Secondly: The Galvanic fluid passes through some bodies and fluids and not through others; that is, through the conductors of Electricity, as charcoal, muscular flesh, water, blood, etc.; and not through the non-conductors of Electricity, such as oxyds of metals and carbon, gases, periosteum, hair, epidermis, cuticle, etc.

Thirdly: The Galvanic fluid requires a perfect contact of conductors with the two ends of the battery, in order to form the circuit of communication. This is not the case with the Electric fluid, which will pass over any small interruption of its course.

Fourthly: The Galvanic influence passes instantaneously to an immense distance. The velocity, with which both these agents move, is truly astonishing. Dr. Watson made Electricity pass four miles across the mouth of the Thames in an instant of time; and Aldini transmitted the Galvanic fluid from the Jetty of the west to Fort Rouge,

at Calais, with equal rapidity, by means of the conducting power of the water.

Fifthly : The power of the Galvanic fluid on animal bodies is in proportion to the *number* of metallic plates employed for its development ; and its effects on metals and other substances are in the ratio of the size and surfaces of the plates. Thus, a hundred pairs of small plates will be more effective in medical Galvanism, than fifty pairs four times larger.

DIFFERENT THEORIES have been formed of Galvanism. Some philosophers have referred the Galvanic phenomenon to an *Electrical*, and others to a *chymical* action. The latter hypothesis was considered to be the more probable, because it satisfactorily explained the excitation of the Galvanic battery, by the action of diluted acid decomposing metallic surfaces, and thereby developing the Galvanic fluid. It has also been observed, that the Galvanic battery is both an *Electrical* and *chymical*

apparatus. Singer's, De Luc's, and Children's experiments would lead to such a conclusion. This hypothesis has also the high sanction of Sir Humphry Davy, for he supposes both Electrical and chymical actions necessary in the excitation of the Galvanic battery.

The differences between Galvanism and Electricity consist, *first*, in their development; *secondly*, in their state; *thirdly*, in their action; and, *fourthly*, in their effects.

*First*: The development of the Electric fluid is obtained by *mechanical* friction; that of the Galvanic fluid by a *chymical* action.

*Secondly*: The Electric fluid exists in a *highly elastic* state; and its particles are strongly *repulsive* of each other, and not disposed to form a permanent union with other bodies. The Galvanic fluid, on the contrary, has the *strongest tendency* to form new combinations; which tendency,

as Sir Humphry Davy observes, is so powerful, as to counteract some of the strongest chymical affinities. Electricity may be compared to an agent in a state of great *dilution* or *expansion*, Galvanism to an agent of great *concentration* and *intensity*. The former has been compared to the flame of a candle, the latter to the flame of a blow-pipe.

Thirdly : The Electric fluid, in its immediate action, causes *great commotion* in its passage from one body to another, its particles being mutually repulsive : whereas Galvanism enters more readily into bodies, and without creating *any* great commotion, on account of its tendency to form new combinations.

Fourthly : The Electric fluid is more powerful in its *immediate*, than in its ultimate effects: the Galvanic fluid, on the contrary, is more powerful in its *ultimate* than in its immediate effects. Hence is deduced the superiority of the medicinal

energy of Galvanism ; and from this important fact has arisen the idea, that where Electricity *ends* Galvanism *begins*.

For a knowledge of the MEDICAL USE of the Galvanic fluid we are indebted to professors Galvani, Aldini, and other continental philosophers and physicians, who first introduced it to notice. The numerous experiments made on dead animals, as well as on human subjects, proved, that Galvanism had a peculiar effect on the nervous and muscular system, and led to the conclusion, that this Herculean power must possess some sanative as well as energetic influence on the diseased actions of living beings, and would effect cures or afford relief in nervous disorders. This supposition was verified by several trials, and numerous instances have, subsequently, fully confirmed its efficacy in those disorders, as well as in many other complaints. Galvanism has not only been used to cure the afflicted living, but also to resuscitate the apparently dead ; and in

suspended animation it has been found to be the only test of vitality, and the surest criterion of recent death. Dr. Grapengiesser, of Berlin, one of the principal writers on medical Galvanism, who strongly recommends its use in palsies, rheumatism, debility of sight, nervous deafness, hoarseness, white swellings of the joints, tumours in the glands of the neck, etc., concludes by observing, that Galvanism not only possesses a stimulating power over the nerves and muscles, but also over the vital forces; and that it moreover possesses resolutive and derivative qualities. Mr. Sprenger, of Jenna, an able administrator of Galvanism, gives an account of his having restored the sense of hearing to forty-five persons; to four of whom he also restored the sense of smelling. Dr. Wilkinson, in his "Elements of Galvanism," has related a variety of cases in which it was applied with the greatest advantage by continental practitioners; and he also describes the beneficial effects which were produced by its use under his own imme-

diate direction in paralytic and spasmodic affections, cramp, tetanus, stiffness of the joints, indolent tumours, scrofulous swellings, enlargement of the prostate gland, headache, complaints peculiar to females, melancholy, madness, and suspended animation. Mr. Yatman, in his small publication on the Galvanic circle, asserts, that he has very successfully employed even the simple power in palsy, dropsy, adematous and scrofulous swellings, mortification, etc. And surgeon Mansford, in his book on epilepsy, states, that he has relieved and even cured several cases of that disease by the use of Galvanic conductors employed externally. A modern traveller, who had lately visited an establishment for insane persons at Aversa, in Sicily, states, on the authority of the medical officers of that institution, that several hundred persons had been, there, cured of melancholy madness by the employment of Galvanism.

Galvanism has also been for some years

administered at the Worcester Infirmary, in cases of asthma, with most beneficial effects : and I have been positively assured by the presiding physician of that institution, that Galvanism has succeeded in curing and relieving habitual asthma, in the ratio of ninety cases out of one hundred ; and that many persons, who had laboured under that distressing complaint from twenty to thirty years, obtained as instantaneous relief, and as permanent recovery, as other cases of a shorter duration. In some of the hospitals of the metropolis Galvanism has also been occasionally and advantageously applied, especially at Saint Bartholomew's, where, in several cases of diseased spine, after the ordinary treatment had altogether failed, it perfectly succeeded. Galvanism is now employed at Paris, and other capitals on the continent of Europe, as well as in America, and in the East and West Indies, with admirable results.

Though the best modern writers on

medicine and surgery, and some of the leading physicians and consulting surgeons of the day, recommend and prescribe Galvanism in a variety of cases, yet few of the faculty have recourse to it, until the usual medicines have proved ineffectual: it is then tried, as the *dernier resort*, and the last hope of their desponding patients, who generally have recourse to it when it is too late.

Other causes also operate against the more general, as well as the beneficial use of Galvanism. Physicians are not allowed, by the laws of the Royal College, to administer Galvanism, because it is a manual operation. Hospital and consulting surgeons confine themselves to the use of the knife, and to giving advice, which are more lucrative occupations: general practitioners are too actively engaged in visiting the sick, in dispensing medicines, and in attending midwifery and surgical cases, to remain at home and afford the time requisite for the regular and stated admi-

nistration of this remedy. The principal reason, however, why Galvanism is not more frequently recommended, and more extensively used, is, because the generality of medical men are not sufficiently acquainted with its curative powers, particularly in some *constitutional* diseases in which it has lately been found singularly beneficial. Of this fact I have had too many proofs; and the public at large know nothing of Galvanism but its name, or its power of giving shocks, and producing muscular motions in dead bodies. Some persons, who have heard of its medical utility, are fearful of its application from an apprehension of the violent sensations sometimes caused by ignorant operators; but, in the form and mode in which Galvanism ought to be applied, no such sensations should occur.

In order to remove the obstacles which have hitherto opposed the progress of Galvanism, as a medical remedy, I think it my duty briefly and candidly to state, *first*,

my experience of its curative powers ; *secondly*, its applicability to certain diseases ; *thirdly*, its medical properties ; *fourthly*, its proper administration ; *fifthly*, its immediate and subsequent effects ; *sixthly*, the disorders in which I have employed it with the greatest advantage : and communicate some important facts, as practical illustrations of the extraordinary effects of Galvanism, in some of the worst cases of disease that have come under my care.

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It is about twenty-six years since I commenced my course of medical studies under an eminent practitioner ; and twenty-three years since I directed my attention to the sciences of Electricity and Galvanism, and their salutary influence on the human frame. In conjunction with a medical friend of very superior talents, and great experience, I employed those agents in a variety of disorders, with the most bene-

ficial results. As I freely gave my services to the public, and to dispensaries in various parts of the kingdom, during a period of fourteen years, numbers of persons resorted to my aid, which afforded me vast opportunities of extending my knowledge of the curative powers of Electricity and Galvanism. Such good effects resulted from a judicious application of these powers, that I was not only firmly and fully convinced of their utility, but was induced, by the solicitations of some of my friends, to employ them in London, and convert into a professional occupation the practice of a science which I had so long followed, in the country, as a pleasurable pursuit.

About nine years ago I settled in town, and obtained the support of some of the most enlightened and liberal physicians, surgeons, and apothecaries, as well as oculists, and aurists of the metropolis. Very soon after, my practice became enlarged and I, consequently, saw a still

greater variety of new and difficult cases, in which I had minutely to investigate the causes of disease, trace their ramifications to their legitimate source, and judge of the applicability and efficiency of my remedies to the individual peculiarities of age, sex, and constitution. I had also to employ various forms and modes of administering Galvanism, and to watch the immediate and subsequent effects produced by its influence, on different subjects and in various stages of disease. Having carefully marked the final results of those courses of Galvanism, where a fair trial has been made, both with regard to failure as well as success, (the latter having, I am happy to say, vastly preponderated) I am led to make the following conclusions, as to the utility of Galvanism in certain maladies.

*First*, Galvanism is not at all applicable to acute or inflammatory diseases, or to those disorders which are occasioned or

perpetuated by a high degree of arterial or nervous excitement.

*Secondly*, Galvanism is very beneficial as a topical remedy in some local diseases, which are not dependant on a constitutional derangement of the system, nor occasioned by an organic or structural change of the parts.

*Thirdly*, Galvanism is often serviceable as a palliative means, affording the greatest relief in organic diseases ; but it is most effectual in the cure of functional disorders, and in local affections connected with the general health, or altogether dependant on it.

The *medical properties* of Galvanism are, stimulant, derivative, resolutive, and deobstruent. Its remedial power, as a natural excitant of the vital forces, vastly exceeds its energy as a local application : for it has not only a most powerful influ-

ence on the nerves and muscles, but also on the arterial and vascular systems; for it increases the action of the heart and arteries, and consequently the fullness or frequency of the pulse, and sometimes both: it also equalizes animal heat, restores the balance of circulation, and exhilarates the spirits. Its beneficial effects on the glandular system, (which is at present little known to medical men,) is astonishingly great, for it promotes healthy secretions of the liver, kidneys, and other glands, as well as those of the stomach, bowels, and the skin. It removes spasmodic affections, and allays the morbid irritation of the nervous system, by its tonic and invigorating influence on the chylopoietic organs. Thus it not only restores corporeal strength, but also nervous, sensorial, and intellectual power. Galvanism is especially effectual in removing biliary obstructions, and in curing those chronic disorders of the liver, occasioned by a residence in hot climates, as well as torpidity of that viscus, induced by sedentary

occupations, or intemperate habits. In these cases it has been found an *efficient* and *beneficial substitute* for mercurial medicines, as its action is exceedingly mild and perfectly safe, and does not entail those ruinous and distressing effects on the constitution, which generally follow a course of mercury. Galvanism is also the more desirable, because, during its administration, it does not require confinement to the house, or any other inconvenient restraint: on the contrary, air, exercise, and a generous diet, are found materially to aid its curative process. Though I am fully authorized by my experience to make these observations, yet I do not assert that Galvanism is an infallible *remedy* for every case of disease to which it is applicable, nor that the occasional use of gentle medicines is to be superseded. But I most positively affirm, that such is its sanative powers in the deranged functions of the digestive organs, that it has, in numerous instances, effected the most extraordinary cures after the

failure of every other internal and external means, which had been most judiciously prescribed and perseveringly used, under the direction and superintendance of the ablest practitioners. As Galvanism is a *natural* excitant, its effect on the human frame is not like that of ardent spirits, and mineral stimulants or tonics, which are generally temporary. The recovery which has been obtained by the Galvanic course has, in the greatest number of cases, been lasting. These facts, which I boldly state, can be borne out by the testimony of a number of respectable individuals of unquestionable veracity, in different classes of society, who have experienced the permanently beneficial effects of Galvanic agency, in the cure of obstinate and complicated diseases, which had baffled all other efforts of the best medical treatment.

In order to ensure a *proper administration* of Galvanism it is necessary that a suitable apparatus should be used, and an

adequate excitation of the Galvanic fluid produced ; proper attention should also be paid to the duration and power of each application, which should be made according to the nature of the complaint, and the excitability of the patient. After repeated trials of different kinds of Galvanic batteries, which I contrived, I now employ one, two, or three pairs of great power, (made under my direction) which I find best calculated for medical use. The conductors are made on a new principle, and can be applied to various parts of the body with the greatest ease, by the patients themselves, which avoids every indelicate contact; or unpleasant exposure of the person. The solution I have found most useful and agreeable in the excitation of the Galvanic battery is the pure muriatic acid, diluted with water ; for its action on the metallic surfaces is more gradual than the nitric, and less offensive to the smell than the sulphuric acid. A saline solution, and a proper coating of the conductors, are essential to an agree-

able transmission of the Galvanic influence into the system. I adapt my various modes of operation to the peculiarities of each case, and direct the remedy to the seat of disease; for I am persuaded, a wrong determination of its influence will defeat the curative intention, and produce no good effects. Hence it is of vast importance to ascertain the organs or parts which are primarily affected, and place the positive or negative conductor accordingly; taking care that they remain in perfect contact, in order to form the circuit of communication between the two poles of the battery. The different forms in which I have administered Galvanism are, by a gentle stream, an interrupted current, or vibratory impulses, and not by shocks: there being a manifest dissimilarity between the sensations and effects produced by each of these forms. The position of the patient is either that of sitting on a chair, reclining on a sofa, or lying in bed if he be too ill to rise up. The degree of Galvanic power that I dispense depends on the

peculiarity of the case and the susceptibility of individuals ; I have, in some instances, imparted the force of two hundred and eighty pairs of plates ; in others, not more than three or four. In some cases I have continued the application for an hour and a half ; and in others, not more than a few minutes. It is also of importance to minutely observe the immediate effects of Galvanism on the countenance and feelings of the patient, in order to judge if an adequate excitement be produced. I have already said, that no violent or painful sensations will be occasioned by Galvanism, if judiciously employed ; when it is otherwise, the cause should be attributed to the ignorance of the operator, or to the wrong position of the conductors. The manner in which Galvanism has been usually applied has been painful, and often violent. The parts have been scarified, metallic conductors used, and powerful shocks given. This practice I reprobate altogether ; and have, therefore, contrived conductors which overcome the resistance

of the skin, and cause the Galvanic fluid to pass into the system without any painful feelings.

The *immediate sensations* usually produced by the administration of Galvanism are, a warmth about the parts to which the conductors are applied ; sometimes heat, titillation, and a gentle irritation of the skin ; a feeling like that of a passing current, or an occasional dropping of water ; flashes of light ; a metallic taste ; increased secretion of saliva in the mouth and throat ; occasionally a disposition to cough ; an agreeable thrill through the body ; pulsations at the part ; and, often-times, a general glow through the frame. It rarely happens that any disagreeable sensation is produced, unless from the fearful apprehensions of the timid patient, or the morbid susceptibility of his nervous system.

The *subsequent effects* generally experienced after the application of Galvanism

are, a glow in the body ; warmth in the hands and feet, and a gentle perspiration ; the abatement or removal of uneasy sensations ; composure or exhilaration of the animal spirits ; better appetite and improved digestion ; sound and refreshing sleep ; and increased discharges from the bladder and the bowels. In other cases it occasionally produces those feelings which are commonly called bilious, but which very soon subside.

The length of time that Galvanism should be employed, as a course, depends much on the nature and stages of the disorder, and the constitutional temperament and habits of the patient. In some instances a few days are sufficient; in others a few weeks; and in very obstinate and long standing cases two or three months are necessary, or a repetition of the course after some interval, in order to effect a perfect recovery : but, on the average, from four to six weeks have been sufficient to obtain the most decided benefit. It has occa-

sionally happened that patients have not experienced the slightest improvement for a fortnight or three weeks, after which their amendment became rapid, and in a week or two they have been perfectly restored. Relapses, during a course of Galvanism, sometimes occur from a variety of causes, as taking cold, eating improper food, excessive fatigue, keeping late hours, etc.; but these casualties only for a short time impede its ultimate good effects. In the majority of cases, recovery has been gradually accomplished; and in a few, it has been immediately experienced; while in others, the boon has been deferred till after the discontinuance of the Galvanic course; from which time patients have dated their progressive amendment, and subsequent restoration to health. The frequency of the Galvanic application must also depend on those circumstances to which I have before alluded; a daily administration is at first necessary, till some decided effects are produced: after which, Galvanism has

been exhibited three or four times a week, and then occasionally as it was found necessary. After a few applications of Galvanism, I am generally enabled to judge how long it will be necessary to continue its use. There is no particular hour of the day to which I have confined the exhibition of Galvanism, for although I had rather use it before than after meals, yet I have advantageously employed it after a full meal to quicken the digestive action, and with the desired effect. Galvanism has been beneficially used by children, adults, and by the aged, in every hour of the day, and in every season of the year ; in cold as well as hot, in wet as well as dry weather ; and from the experience of others I can also say, that it is equally efficacious in every climate of the world.

As I deprecate every species of quackery, and reprobate the conduct of those empirics who impose on the credulity of the public, and, by their profound ignorance

of medicine and surgery, destroy the constitutions and lives of their fellow creatures ; so do I condemn the practice of those charlatan-electricians, who are merely mechanical operators, and who are perfectly unacquainted with the physiology and anatomy of the human frame, the nature and treatment of diseases, and the medical properties of Electricity and Galvanism, and yet proclaim them as *panaceas* for all diseases, and apply them at random to every case that unhappily comes within their reach. I also disapprove the injudicious application of these means to the effects, and not to the causes of disease ; a practice that frequently aggravates distressing symptoms, seldom palliates them, and is, at the best, but an useless *placebo*.

Owing to this random and inefficient mode of administering Electricity and Galvanism, many persons have tried those agents to no purpose: while others, afflicted with the same disorders, have

obtained the greatest benefit from a different practice, which, by attacking disease at its source, often renders the previous medical treatment efficacious. Thus, in numerous cases, by a combination of the ordinary with philosophical remedies, the most salutary results have been produced, which could not be obtained by their separate use.

As nothing tends more to the injury of any remedy than its indiscriminate use, which may be justly considered as its real abuse, I have made it my rule never to employ Galvanism where it is not properly and evidently applicable.

In very doubtful cases, where the probability of relief is against the patient, I apprise him, that if Galvanism be tried, in order to set his mind at rest, it must be considered by him as an experiment; but in cases which are altogether hopeless, I invariably decline to administer the remedy.

Galvanism has, in some cases which were apparently desperate, produced the most beneficial effects; while in others of a more favourable character it has not been found so useful, the reason of which I have generally traced to some irreparable organic or structural injury. In the former instances, this powerful agent had to combat with a high degree of functional derangement, under the semblance of organic disease ; and in the latter, an incurable structural disease, only evinced by a very slight disturbance of the system : which fact has often been fully ascertained by a *post mortuum* examination.

The other general causes of failure were fairly to be attributed to the very short, irregular, and inadequate trials of Galvanism, and to deviations from those prudential rules which ought to have regulated the conduct of patients, who, by their instability and improvidence, defeated their own recovery and disappointed my hopes.

I shall now conclude my remarks by noticing the *disorders* in which I have successfully exhibited the Galvanic influence, and shall state some important *facts*, as *practical illustrations* of its curative powers in the various stages and peculiarities of constitutional and local diseases.

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IN DISORDERS OF THE DIGESTIVE ORGANS, with all their symptoms and consequences, I have employed Galvanism with the best effects. Within the last nine years, I have had about eight hundred cases of stomach, liver, and bowel complaints, accompanied by many distressing local affections, which have been relieved and cured, in the proportion of eight cases out of ten. In *dyspepsia* or *indigestion*, which is the most common ailment among all classes of society, I have generally observed some particular symptoms predominate, accord-

ing to the constitutional temperaments and habits of individuals.

The morbid condition of the stomach is indicated by some of the following symptoms : a want of appetite ; nausea at the sight and smell of victuals, or a constant craving for food which subsides after taking a few mouthfuls ; a capricious and depraved appetite, which requires variety and improper food ; greasy and watery, or sour eructations ; heartburn, flatulency, occasioning great distention of the stomach and bowels, with a rumbling noise of wind in the intestines ; and sickness and vomiting. Sometimes there is a sense of constriction in the throat ; gnawing pains in the stomach ; cramp and spasms, with hurried, difficult, and laborious breathing ; habitual chilliness ; languor ; great loss of strength ; extreme depression of spirits ; palpitation and fainting ; flushes of heat in the head and face ; great restlessness, fickleness, and irritation of temper ; loss of memory ; giddiness ; headache ;

wakefulness ; disturbed sleep ; distressing dreams ; and nightmare.

A patient, about forty years of age, labouring under a complication of diseases, had, for years, suffered extremely from indigestion, attended by most of those symptoms ; her stomach was so much disordered, that she had not been able for more than a week to taste any food, but was constantly sick, and vomited every fluid she drank, and could not retain even water on her stomach. Her case was deemed perfectly hopeless by her medical attendants ; who, in consequence of the great irritability of her stomach, objected to a trial of Galvanism : however, at the earnest solicitations of the patient's relatives, I was prevailed upon to administer it, which I did in a manner that, I was sure, could do no harm, for a few minutes only, and that as a mere experiment, without expecting any favourable result : but, to my astonishment, the nausea and vomiting immediately ceased ; and, in two

days after, she was able to eat solid food, as beef and mutton, without experiencing the slightest inconvenience whatever, or any recurrence of those urgent symptoms.

In another instance I was called in by a physician to a patient who was apparently dying ; he informed me that her stomach was in a state of collapse, occasioned by a violent inflammation of that organ, and requested a trial of Galvanism, which I administered with such immediate good effect that a repetition was not deemed necessary.

A patient, who had for four years laboured under many of the above enumerated symptoms of dyspepsia, and, during that period, was unable to digest any solid food, living solely on slops, as arrow-root, gruel, etc., was able, in a few days, to eat animal food with the greatest relish ; and, eventually, he regained his digestive powers.

A middle-aged gentleman, whose principal ailment was acetous fermentation of stomach, and who had, for several years, been unable to eat fruit or vegetables or drink any other beverage than weak brandy and water, was, after a fortnight's course of Galvanism, so fully restored, that he resumed his former mode of living ; ate fruits and vegetables, and drank malt liquor, cyder, and tartarous wines : and he continues well to this day.

A lady, aged about fifty, who had for thirty years suffered from acidity of stomach, experienced as decided benefit as a gentleman, of seventy-nine years, who had, about the same time, been troubled with that disagreeable symptom of indigestion.

About three years ago, I had a very remarkable case of indigestion ; the leading feature of which was flatulence to so great a degree as to endanger the life of the

patient. This affection generally came on an hour after meals, and so violent was the pain the patient endured in eructations, that he was frequently forced from his chair to the floor. Nothing afforded him any relief but Galvanism, which was administered to him but a few days.

A gentleman, about fifty years of age, had suffered from cramp and spasm in the stomach and disordered respiration, for five years, and had, under the direction of his physicians, taken immense doses of mercury, purgative medicines, stomachics and tonics, without experiencing any material relief. He had recourse to Galvanism for three weeks, and was perfectly cured.

A middle-aged gentleman, who had long resided in a hot climate, suffered much from diseased stomach for five years ; his chilliness and debility were so great that he was brought to me very warmly clothed on a hot summer's day, supported by a

friend, without whose assistance he could not even stand for a few minutes. The third day after he was Galvanized, he walked more than two miles ; and, in the course of a month, his circulation became vigorous and his corporeal strength was restored.

Another patient, about fifty years of age, who had also lived for some years in one of the West India islands, was constantly affected by an alarming giddiness ; he came to England for advice, tried all the usual stomach remedies, bleeding, cupping, leeches, blisters, seatons, etc., without any advantage ; but he was perfectly and permanently cured by a three weeks course of Galvanism.

A young gentleman, who, suffering under extreme depression of spirits, had worked up his imagination to the belief that he should not live a fortnight longer, was, by the administration of Galvanism, cured in two weeks, not only of his false

conceit, but also of violent palpitation and fainting, which were frequently induced by the slightest fatigue of body or mind.

I have very lately had a case in which the loss of memory was the principal feature of indigestion. The patient was so forgetful, that he could not go from home alone, as he could not remember his way back, or any circumstance that might have occurred the day before. In two months Galvanism effected his recovery, and he was enabled to transact business with perfect recollection.

A stout healthy man, sixty years of age, who had not been able to sleep for more than a fortnight, came to me for advice ; he stated that his mind and temper had been, for some months past, in a state of such irritation, that he felt an almost irresistible disposition to quarrel with every person he met, and was at a loss to account for these unusual feelings, not being aware

of the derangement of his stomach. After the first application of Galvanism he became more composed, and on the following night he had refreshing sleep ; in five weeks he regained his digestive powers and his natural good temper, and has since continued well.

I have at this time a gentleman, aged sixty, under my care for a rheumatic attack, who was my patient six years ago for a stomach complaint, which had oppressed all his energies for ten years : his principal suffering was at night, and his sleep was constantly disturbed by the most distressing dreams and nightmare ; during the whole of that period, he declared, he never had one night's refreshing rest. A short course of Galvanism perfectly cured him, and he has never experienced the slightest return of his disorder.

About eighteen months ago, I had a remarkable instance of recovery in a lady, about fifty years of age, who had, for

fifteen years, suffered from continued and violent headaches. Her indisposition was so great that she was very often confined to her bed, and she had not left her house for two years before she came to me. Galvanism was, in this case, administered nearly three months ; and when I last saw her, (about six months ago,) she informed me she had continued free from her malady.

The condition of the tongue and pulse varied much in the different subjects, and the mildest aperient medicines, only, were occasionally taken by the patients to aid the action of their bowels.

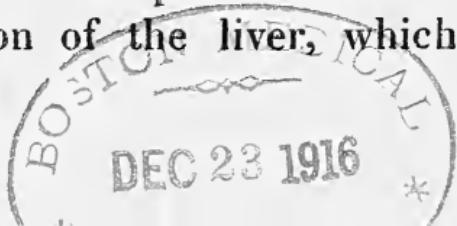
In *disorders of the liver*, as chronic inflammation, congestion, enlargement, torpidity, induration, or scirrhosity ; and when its secretions are vitiated, irregular, or defective ; in obstruction of bile in the gall ducts, from spasm and gall-stones, producing jaundice, I have applied Galvanism with the greatest advantage.

As I shall relate many cases in the appendix to prove that Galvanism is an efficient substitute for mercurial remedies in chronic hepatitis, I shall now merely mention a few strong facts that will bear me out in this assertion.

A patient who had for ten years endured the most distressing pains in her right side from chronic inflammation of the liver, which could not be subdued by general and topical bleeding, mercurials, etc., was perfectly cured by a short course of Galvanism, seven years ago, and has ever since been free from the complaint.

Another patient, who laboured under a congestion of the liver, four years ago, was, after seven applications of Galvanism, completely relieved and remains well to this day.

A gentleman, about fifty-five years of age, had had frequent attacks of acute inflammation of the liver, which termi-



nated in an enlargement and torpidity of that organ, under which he suffered for four years; and during that time mercurials were exhibited in every form, the nitro-muriatic baths perseveringly tried, and general and local bleedings, blisters, tar-tarized ointment, seatons, etc., were often repeated to no purpose. This patient was cured of his disease by the use of Galvanism in six weeks.

About seven years ago I had a lady under my care whose liver had been in a torpid state for more than twenty years, and notwithstanding she had tried repeated courses of mercury, acid - baths, and mineral waters, that organ still remained inert; but was eventually roused to action by Galvanism, which was employed for three months: since that time her liver has continued to perform its functions, and occasionally secretes too much bile.

A middle-aged gentleman, who, sixteen years before his application to me, had met with a serious accident which brought on a violent inflammation of the liver, induced great torpidity, and left a very considerable hardness in that organ, was cured six years ago by Galvanism administered to him for only two months ; and he has since continued to enjoy excellent health and spirits.

Another gentleman who had lived in the West Indies for many years, and whose liver was pronounced to be scirrhous by all the medical men he had consulted, obtained perfect and permanent recovery from two courses of Galvanism, and has been well ever since.

In all these cases the discharge from the bowels indicated the condition of the liver, the evacuations being sometimes very fetid, spongy or watery, clay or tar coloured, green, black, grey, or whitish, accompanied with froth and mucus.

Galvanism was applied but once in a case of obstruction in the gall ducts from spasmodic constriction, which produced so copious a discharge of bile that the patient had fourteen evacuations immediately after it ; and in another instance, after four applications of Galvanism, the bowels were moved more than forty times in three days, and discharged an immense quantity of vitiated and putrid bile, without occasioning any other inconvenience than a little weakness.

In several instances Galvanism, applied but a few days, has caused gall stones to pass off by the bowels, which were clearly ascertained by an examination of the alvine secretions.

An elderly gentleman, who had had frequent attacks of the jaundice, was, after a fortnight's course of Galvanism, perfectly restored : and a young gentleman, who

had been jaundiced for a considerable time, was, after the failure of every other means, cured by Galvanism four years ago ; and, since his recovery, has continued to enjoy most excellent health.

I must here observe, that I have had several cases in which repeated courses of mercury had failed to affect the system and produce salivation ; but the Galvanic influence employed in conjunction with that remedy, or very soon after, induced ptyalism.

A middle-aged gentleman, suffering under a liver complaint, who had, under the direction of his physician, taken for a long time large doses of calomel, which never affected the mouth, but always passed off by the bowels, was, after a short course of Galvanism, obliged to discontinue it, as his liver was powerfully excited and his health soon after restored.

*Disorders of the bowels*, as chronic inflammation, obstruction, constipation, diarrhœa, etc., are frequently occasioned by diseased liver.

A young lady, who had been a long time under medical care for a chronic inflammation of the bowels, which had produced extreme emaciation and loss of strength, was perfectly cured by Galvanism three years ago, and has not had any recurrence of the disease.

In many cases obstruction of the bowels, occasioned by fecal accumulation, has been removed after a few applications of Galvanism ; but where the liver has been torpid, its secretions defective, and the bowels sluggish or habitually costive, Galvanism has been more tardy in its operation, and a longer course has been required to bring them into a regular state. Several patients, whose bowels had not acted for some years without the daily aid of purgatives, have been so completely

recovered by the influence of Galvanism, that they have rarely needed any aperient medicine.\*

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\* I have lately attended a patient who was suffering severely from most obstinate constipation. Several of the leading physicians and surgeons were called in; various consultations held; and every medical, surgical, and mechanical remedy was tried without the least effect. Sir A. Cooper and Mr. Pennington then recommended Electricity, and I was requested to apply it. This I did; and after the third application the patient experienced great relief: after I had continued the use of Electricity for about a month, it produced a considerable degree of excitement and tenderness about the bowels, and I then administered the Warm Air-Bath with the desired effect. In a few days the bowels resumed their action, and the patient had three or four daily evacuations without pain or uneasiness, after a most inveterate costiveness which had continued forty-five days. Various conjectures were formed as to the cause of this extraordinary derangement; and the opinion of Sir A. Cooper and Mr. Pennington, that a certain portion of the bowels was palsied, is most probable. Electricity was administered to the patient under that idea. I am happy to add, that the patient is gradually recovering from the effects of a disease which very rarely occurs and almost invariably proves fatal.

In a case of diarrhoea, which occurred in my practice four years ago, the bowels were for some months constantly in a state of great irritation, and discharged their contents from twenty to thirty times every day ; but Galvanism gradually effected a cure in the course of ten weeks.

In spasmodic stricture of the rectum I have administered Galvanism with great advantage ; but in piles and in *prolapsus ani* with but partial relief.

I have not had many cases of *diseased spleen*, but in the few that have occurred Galvanism has been very useful.

A gentleman who had had an acute inflammation of the liver and spleen, which terminated in a very considerable enlargement and hardness of the spleen, went through a course of Galvanism, some years ago, and obtained the greatest benefit. The liver resumed its functions, and the spleen was considerably reduced and softened.

In *affections of the kidneys*, as chronic inflammation, obstruction, and torpor, I have applied Galvanism with the best effects.

A gentleman who had complained of a constant pain in the right kidney, which had continued for some months, obtained perfect relief in a few weeks, and has since been free from that ailment.

Another gentleman who had not secreted nor passed any urine for six days, and had taken immense doses of cantharides and other powerful diuretics, hot baths, etc., without any benefit, after the third application of Galvanism freely discharged the contents of the bladder.

In several patients, whose urinary secretions were pale and profuse, almost amounting to diabetes, Galvanism has produced the most decided change in a very short time.

*Disorders of the bladder* are often occasioned by a derangement of the digestive organs, inducing great irritation at the neck of the bladder and inability to retain the urine, or a difficulty in discharging it without straining and pain.

A gentleman, sixty years old, who had long been an invalid and suffered much from spasmodic irritation of the neck of the bladder, and had nearly lost the power of retaining the urine, was cured in six weeks.

Another gentleman, who had for years complained of a spasmodic stricture of the urethra, and great difficulty in voiding urine, was relieved in a few days, and has since been free from all uneasiness.

I have found Galvanism very efficacious in *nephritic* complaints, for it acts powerfully and immediately on the bladder.

In one case after four applications made to a patient who was labouring under violent pains from gravel, he passed a quantity of red sand, and became immediately easy, and has not had any return of the complaint.\*

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\* “*Application of Galvanism to the extraction of Urinary Calculi.*—(Annales de Chimie et de Physique, Juin, 1823, xxiii. 202.)—M. M. Prevost and Dumas, the Genoese physiologists, whose ingenious researches on the blood and on urea, we noticed in our last number, have just published the outline of some experiments they have made, to prove, that the extraction of urinary calculi from the bladder may be facilitated by means of Galvanism. They found that when a fusible calculus, (ammoniaco-magnesian phosphate) was placed between the extremities of the conductors of a trough containing one hundred and twenty plates, and was plunged in this state under water, the bases and the acid were gradually transported to the opposite conductors, and there combined anew in the form of a fine powdery precipitate. The process having been continued upwards of sixteen hours, a calculus, which weighed originally ninety-two grains, became so friable that the slightest touch broke it down into small crystalline grains, none of them larger than a lentil. They next proved to their satisfaction,

## DISORDERS OF THE HEAD.

*Palsy* is either a partial or total loss of feeling, sometimes attended by a morbid sensibility, or a partial or total loss of the power of moving the affected parts, or an excess of involuntary motion. In most

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that a pair of conductors, protected by some non-conducting substance to within a few lines from their extremities, might be introduced into the bladder of a dog, and connected with a trough of one hundred and thirty-five plates, without occasioning any uneasiness to the animal: although the same apparatus immersed in water decomposed it so rapidly as to furnish a torrent of gases. Having thus proved that no harm could result from disengaging the Galvanic fluid in the bladder, they finally proceeded to introduce the same conductors into the bladder of a middle-sized bitch, but with a fusible calculus fixed between them: the bladder was then distended with water, and the conductors were connected with the Galvanic trough. After the calculus had been thus acted on for an hour twice daily, during six days, it had lost more than an eighth part of its weight, and had become so weak and brittle that it could not be introduced again into the bladder. The animal was killed a few days afterwards, and the bladder was found to be quite free from injury or disease.—See the *Edinburgh Medical and Surgical Journal*, LXXVIII. p. 236.

cases the power of both feeling and moving is impaired or lost. In that species of palsy termed *tremor*, there is a constant trembling which cannot be controlled by the will ; and, in that which is called the *shaking palsy*, the constant agitation of the muscles can be immediately checked by the act of volition. In all these cases I have employed Galvanism, with more or less advantage, after the failure of the ordinary treatment, as well as long courses of Electricity skilfully administered. I have seen more cases of palsy than most general practitioners, from the well known efficacy of Electricity in paralytic complaints ; and I have had a long as well as extensive experience of both Electrical and Galvanic agency, which enables me better to appreciate their comparative energies ; and I coincide in opinion with some medical writers, that Galvanism is a much more efficient local stimulus than Electricity in various cases of paralysis. I further maintain that the *internal* exhibition of Galvanism, to the remote and

primary diseases occasioning palsy, has generally succeeded in relieving and curing that complaint in its worst stages, after Electricity and Galvanism have been applied as *local* excitants without effect. This remark applies to paralysis occasioned by a functional derangement of the digestive organs, and not to paralysis proceeding from a primary disease of the head, or a rupture of the blood-vessels of the brain, caused by serous or sanguineous apoplexy. In the former cases palsy has been cured in a short time; but in the latter it has proved more obstinate, and has been more frequently relieved than cured. Most cases of paralysis which have come under my treatment were distinctly traced to a previous disorder of the abdominal viscera, occasioning a determination of blood to the head, thereby accumulating, diminishing, or impeding the flow of nervous influence from the brain to the organs of motion. I have had but few cases of palsy altogether occasioned by

a high degree of nervous excitement and a plethoric state of the sanguiferous system.

A middle-aged man, who had for some years suffered from indigestion, was suddenly attacked by hemiplegia, (palsy of one entire side of the body, from the head to the foot,) which produced an immediate loss of the power of feeling and moving in the right side, and a frightful distortion of the countenance. The sight and speech became affected, the spirits greatly depressed, and the memory and judgment impaired. The complaint was preceded by a paleness of the countenance, slight twitches about the face, and a numbness and tingling in the hands and feet. The proximate cause was too great exertion and uneasiness of mind. The usual appropriate remedies were immediately employed, as well as blisters, liniments, Bath-waters, and the local application of Electricity, with but partial relief; the effects of the disease continued for some

years, till a course of Galvanism restored the tone of the digestive organs, when the patient fully regained his sensorial and muscular powers, as well as his former intellectual capabilities. I should also observe, that, after a lapse of more than eight years, the leg and thigh, which had been considerably wasted, soon acquired their natural size; and the patient has had no recurrence of the disease.

A married female, who had a similar attack of palsy, occasioned by a torpid liver and constipated bowels, was, after ten years, fully restored, and to the present time enjoys perfect health of mind and body.

A young female, who had an attack of palsy in the left side of the body, occasioned by a depression of her nervous system, arising from a train of distressing circumstances and a constant attendance on a sick bed, tried the effects of Electricity without any apparent advantage,

but derived from the internal administration of Galvanism, the greatest benefit that her case could admit of; for a serous effusion having taken place precluded her perfect recovery.

A robust gentleman, about forty years old, had an attack of palsy in the left side of the body (the result of a sanguineous apoplexy), and lost the use of his arm and leg. He was immediately bled, reduced by purgatives, and kept for some time on a very low diet. Four years after which he applied to me, and he fully regained the use of his hand and arm; and his leg and foot were also restored to health and use, but not to their natural gait. The recovery was, in this instance, effected by Galvanic stimulus to the limbs after the failure of Electricity.

In *paralysis partialis* (partial palsy, affecting only part of the body), Galvanism has, in numerous instances, proved more beneficial than Electricity.

A middle-aged lady had an attack of palsy in the right side of her face. Her sight was injured, the size of the eye increased, and the eyelid dropped ; the muscles of the face also appeared much swelled and immovable ; and her mouth was drawn aside. After the patient had for near a year gone through the usual treatment of general and local bleedings, blistering, purgatives, and stomachic remedies, and after using powerful stimulants as well as Electricity for some time without any material relief, she was cured by a course of Galvanism, internally exhibited, five years ago, and has since continued perfectly well.

I have had several cases of paralysis of one and of both the eyelids, so as to obstruct vision, while the sight was unimpaired. The employment of Galvanism to remove the stomach complaint, which occasioned that affection, perfectly restored the muscular power of the eyelids.

A few instances of palsy of one of the muscles of the eyeball, causing it to be drawn towards the inner or outer corner of the eye, so as to occasion the appearance of squinting, have also been cured by the constitutional as well as topical application of Galvanism.

Many cures of paralysis of one or of both hands and arms, as well as of one or of both legs and feet, have been effected by the internal exhibition of Galvanism.

A middle-aged lady had for some months gradually lost the use of both hands, attended by a numbness in the fingers, occasioned by a stomach and liver complaint, under which she suffered for some years. The patient had recourse to mercurial remedies and the acid-bath with some advantage to her general health, but none whatever to her hands, the use of which was restored in a few weeks by the

administration of Galvanism to the digestive organs, after it had failed to produce any beneficial effect as a local stimulant.

Similar results have been obtained in those cases where the entire limb was paralysed ; but when the thumb and one or two of the fingers only have been affected, a cure has sometimes been made, but, generally, improvement rather than perfect restoration of power has been produced.

Palsy of the right or left leg has, in many instances, soon been cured by the internal use of Galvanism to the abdominal viscera.

An elderly gentleman had almost lost the use of his right leg for some time ; he was obliged to walk with a stick and to support himself by it when standing, and his limb was so weak that when he went up or down stairs he was obliged to support himself by the bannisters. After a

three weeks course of Galvanism, applied to the stomach and bowels, he fully regained the power and motion of his leg.

Paralytic affections in the feet or toes, arising from a constitutional cause, have been always cured by Galvanism ; but in those cases where the paralysis has been produced by local injury, the topical application of Galvanism has not been found so serviceable.

Paralysis of the optic and auditory nerves will be noticed under the head of local diseases ; and I shall, in the appendix, give some cases of the recovery of the voice.

*Paraplegia*, palsy of the half of the body, from the middle of the spine to the toes of both feet.

Whenever this malady was occasioned by a disordered state of the alimentary canal, the internal exhibition of Galva-

nism generally succeeded in removing the complaint; but when the spine was primarily diseased by an effusion or tumour pressing on the spinal column, a thickening or induration of the ligaments of the vertebræ, curvature, or some external injury, Galvanism has not been found so efficient.

A gentleman, about thirty years of age, suffered under paraplegia, which also affected both the bladder and the rectum, so as to render him unable to retain urine or fæces: Galvanism restored the tone of his stomach, and produced healthy secretions of the liver; but as the bowels did not regain their perfect action, I was led to suspect and to detect a stricture in the rectum, which being cured by mechanical means, the bowels were soon after restored to their proper functions.

A youth, labouring under the same complaint, arising from an affection of the nerves of the spine, was kept in a

recumbent position for some months without deriving any benefit from that mode of treatment. The internal use of Galvanism roused the action of the liver and bowels, produced daily evacuations without the aid of aperients, which were before absolutely required, gave tone to the enfeebled nerves of the spine, and, in three weeks, perfectly cured the patient; who has for these last two years been both healthy and strong.

In several instances, where the bladder could not retain or fully discharge its contents, and where the *sphincter ani* had lost its muscular power of expelling fæces, Galvanism afforded both relief and recovery.

The lower limbs, which were often much wasted, have also been restored to a sense of proper feeling and to the power of natural action, as well as to their original form, by Galvanism. The unsteady and trembling gait, and the stiff and awkward

movement of the legs, have yielded to a firmness of tread and agility of step ; and increased strength has enabled the invalid to take the strongest foot exercise without much fatigue.

Tremor of the head, hands, and legs, arising from a high degree of nervous irritation, and an irregular influx of nervous influence from the brain to the organs of motion, have generally yielded to the influence of Galvanism.

A lady far advanced in life had for years been subject to a constant trembling of the head and hands, which was always increased by the slightest agitation of mind ; after a short course of Galvanism, directed to remove the derangement of the abdominal viscera, she was perfectly cured six years ago, and continues to enjoy the benefits she then obtained.

An elderly man, who suffered extremely under an incessant, violent, and irregular

movement of the head, and frightful and ridiculous distortions of the countenance, for more than twenty years, was considerably relieved by Galvanism. He was rendered capable of reading, writing, eating, and drinking, without inconvenience ; and was also enabled to sleep by reposing his head on his pillow, without the necessity of using a leathern strap to bind it down to the bed-post to prevent its sudden and violent agitation, as had previously been the case. The muscles of the face were more composed, and did not any longer produce the same ludicrous expressions.

In that affection of the muscles of the neck which causes the head to be drawn on one side, and to remain in that position till it is forced back, and sometimes accompanied with a tremulous motion, Galvanism has afforded partial relief ; but in neither of the two cases which have occurred in my practice, did it effect a permanent recovery.

*Shaking palsy.*—Of this disorder I have had but three cases, which were in middle-aged men, one of whom was far advanced in life. In one case the regular agitation of the muscles of the right hand and leg was lessened. In another the same affection of the left leg continued unabated, for a fair trial was not given to the Galvanism. In the third case the progress of the disease was most effectually arrested ; the patient being cured of the primary disorder, which had continued ten years before the spine was affected, and which brought the complaint to its third stage ; the fourth always proves fatal. The benefit this patient received from Galvanism, six years ago, was of essential use ; and the last time I heard from him he continued in health, and did not get worse in his limbs.\*

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\* Parkinson's work on the "Shaking Palsy," is a short, but excellent treatise ; and should be read by every member of the medical profession, as well as by

*Chorea Sancti Viti*, — Saint Vitus's dance.—This complaint frequently attacks females before the age of puberty, and is generally occasioned by indigestion, green sickness, or obstruction, producing a great disturbance of the nervous system, and violent contortions of the muscles of the face and limbs. I have, in most cases, exhibited Galvanism to the digestive organs, which has equalized the distribution of nervous influence, excited uterine action, and cured the disease.

A female, who for some months had been severely affected by this complaint, and had tried all the usual remedies under various practitioners without any mitigation of her sufferings, was perfectly cured of the disease by the internal administration of Galvanism for a few weeks.

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those unfortunate individuals who are subjects to that disease: particularly as one of the chief peculiarities of this disorder is, an aversion to seek or obtain relief from any means whatever.

*Epilepsy.*—Very few cases of this dreadful malady have occurred in my practice. In epileptic fits, occasioned by a disordered state of the abdominal viscera, sympathetically affecting the brain, and producing vehement affections of the nervous system, Galvanism, administered in my usual mode, has afforded considerable relief ; but when the malady was *idiopathic* (a primary disease), or referable to mal-formation, or to some organic mischief, little good has been derived from Galvanism ; but in no instance has it aggravated the disorder. To many epileptic patients I have employed Electricity with the greatest advantage, and have recorded some cures in my treatise on that subject. But as I have not had sufficient opportunities of fully judging of the remedial powers of Galvanism, as applied to this disease, I cannot say how far it is capable of affording perfect and permanent recovery ; yet my experience, incomplete as it is in this disorder, leads me to anticipate the most favourable results, as will appear from a

very interesting case inserted in the appendix.

*Insanity.*—In this most formidable of all human ills, I have had very little experience. Many cases of hypocondriasis (melancholy), I have successfully treated by Galvanism; but I have had only one solitary instance of madness in my practice. The patient, who was the subject of this affliction, I am happy to say, was perfectly cured in a short time by the internal exhibition of Galvanism to the digestive organs. The case being truly interesting, it shall be more particularly noticed hereafter.

*Asthma.*—In difficult or laborious breathing, arising from some functional derangement of the chylopoetic organs, or from an obstruction of nervous influence from the brain along the *par vagum* to the bronchial vessels or respiratory organs, I have administered Galvanism with most remarkable benefit.

Instances of habitual or humoral as well as spasmodic asthma, recurring in winter or summer after certain intervals, have been perfectly and permanently cured, in patients of different ages, by Galvanism. From my experience of the singular efficacy of this most powerful remedy, I am led to conclude, that most cases of asthma may be considered as secondary and not as primary diseases ; and are frequently symptomatic of, or dependent on, some constitutional malady. I have also observed an extraordinary peculiarity in each individual case worthy of notice, and relief, in general, has been instantaneous, though the recovery has been progressive.

About seven years ago, a gentleman far advanced in life came to me for relief ; his breathing was hurried and very laborious, and he had been for more than twenty years constantly suffering from habitual asthma, and a great difficulty in expectorating the tough viscid phlegm, which almost impeded respiration. In a very few

minutes after he was subjected to the Galvanic current, his breathing became perfectly easy, and he was able to expectorate freely, and to walk up stairs without any difficulty. After a month he obtained perfect and permanent recovery.

A middle-aged man, who had been for several years subject to very frequent and sudden attacks of spasmodic asthma, and who was frequently obliged to start out of bed, in the utmost haste, and throw open his window for fresh air, to prevent suffocation, was not immediately relieved by Galvanism ; nor did he experience any diminution of his complaint till after that remedy had been continued for six weeks, when his recovery became complete.

As I shall hereafter give many cases of asthmatic patients who have obtained essential benefit from Galvanism, I shall now only add, that no other means, with which we are acquainted, has effected so many extraordinary cures as this remedy ;

which has frequently proved successful after the failure of Electricity and every other mode of treatment, perseveringly tried, under the direction and superintendance of the ablest practitioners in different parts of the world.\*

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\* The following communication, taken from a periodical work, is worthy of notice. "Professor Recamier, of Paris, has employed the Galvanic fluid, as directed by Mr. La Beaume, in a case of asthma with complete success. The patient (a man) was sixty-six years of age; he had been complaining for a considerable time of great difficulty in breathing: and a few days before he was admitted a patient of the hospital (Hotel Dieu, of Paris), his respiration was very laborious. Professor Recamier selected the case as a proper one for the trial of Galvanism. He commenced its use during the violence of an asthmatic paroxism: 'and in a few minutes,' he says, 'the breathing became free.' The remedy was afterwards repeated every second day, for nearly a month; 'when,' says the Professor, 'he ascended fifty steps of stairs with great celerity and ease, and without any sense of oppression.' He was then discharged cured."—*Gazette of Health, December 1824, page 1176.*

*Angina pectoris.*—I have had but one case of this disease in which I have tried the effects of Galvanism. The case of this patient, who was far advanced in years, and who obtained very great benefit, shall also be detailed in the appendix.

### CACHECTIC DISEASES.

This class of disorders arises from a vitiation of the humours of the body, producing a depraved state of the whole or certain parts of the frame.

*Atrophy* is a species of consumption, or a gradual wasting or emaciation of the body, or some of its members; the consequence of defective nutrition, from impaired digestion and the loss of nervous power, or from some organic disease of the thoracic or abdominal viscera. As Galvanism is beneficially applicable in dyspepsia, by restoring the tone of the digestive organs and increasing nervous

power, it checks the progress of atrophy, and frequently cures the disease: but when a structural change of the vital organs has taken place, it must necessarily prove unavailing. In numerous cases of indigestion, in which emaciation was its leading feature, and the animal functions were so much weakened as almost to preclude the hope of recovery, I have invariably found that, as soon as the digestive action was regained, the loss of corporeal substance became soon repaired.

This remark was strikingly exemplified in the case of a gentleman who was in the prime of life, and who had for some years laboured under a disordered state of the stomach and bowels, and was almost reduced to a skeleton: at the commencement of the Galvanic course the patient weighed himself, in order to ascertain what effect the remedy would have on his frame. Being put on a very spare diet he expected that a greater degree of emaciation would follow from the plan he was about

to pursue ; but at the end of a fortnight he was astonished to find that he acquired the additional weight of three pounds, and in six weeks he was restored to his former health and strength, and soon after became very stout.

When indigestion and habitual constipation have induced a distension of the bowels and unhealthy corpulence, the Galvanic influence has, in many instances, reduced the size of the abdomen and other parts of the body.

A dyspeptic patient, about fifty years old, who had been a very free liver, and had become very corpulent, was, in one fortnight, reduced four inches in circumference, which he ascertained by measurement ; and in five weeks he regained his former shape and activity.

*Incipient phthisis*,—the first stage of consumption.—I have found Galvanism very beneficial in checking the progress

of this disease, but only in two instances have I succeeded in curing it.

About eight years ago I had a well-marked case of phthisis in a boy about fifteen years of age, who had laboured under some of the symptoms of incipient consumption ; particularly laborious respiration, emaciation, prostration of strength, spitting of blood, and an incessant teasing cough, most troublesome at night, with a slight degree of febrile action. As this patient was also suffering much from indigestion and diarrhœa, I directed the Galvanic influence to his stomach, liver, and bowels, and carefully avoided any excitement of the lungs. In the course of three weeks the patient obtained freedom from the distressing symptoms which had oppressed him ; and, in a fortnight after, he regained his former health. After the lapse of near a year this youth informed me, that, since he had been under my care, he had continued free from the dis-

ease. The other case shall be narrated in the appendix.

*Pulmonary consumption.*—Of this hopeless disorder I have had but one case, in which I have employed Galvanism with singular relief to the dying sufferer.

The patient, a young man about twenty, was in the last stage of pulmonary consumption, preceded by acute inflammation of the lungs, which could not be subdued by the most active and judicious medical treatment. I was requested by his physician and relations to try the effect of Galvanism, which I consented to do as a mere experiment, without anticipating any beneficial results; for the patient had been given over by the late Dr. Baillie and other medical gentlemen attending him, who pronounced it as their opinion that he could not survive three days. The first application of Galvanism was made while the patient was under great febrile

excitement, while the hectic flush was glowing on his cheeks, his breathing exceedingly oppressed, and expectoration very difficult. In three minutes his pulse was reduced from one hundred and twenty to one hundred ; he freely expectorated a quantity of mucus and pus ; the fever and thirst had left him ; he had a refreshing night's rest, and was relieved from the violent cough that had incessantly troubled him. On the second day he discontinued aperient medicines, as his bowels were sufficiently moved by the aid of Galvanism alone, which excited the biliary organs, and produced healthy secretions of the liver. The extraordinary benefits this patient obtained not only surprised his medical attendants, but induced them to request me to continue the Galvanism, which I administered almost daily for about a month, with such results as fully convinced me of its sanguative powers ; for the patient not only regained his appetite and digestion, but was relieved from the urgent symptoms which

had greatly distressed him. After that time he gradually sunk under the disease, and expired without any apparent suffering. The surgeon-apothecary, who attended this interesting case, published the following particulars in a popular work which he edited, entitled the *Medical Intelligencer*, for June 1820, page 186.

“We tried it (Galvanism) upon a young man who was dying of common tubercular consumption, and who is, indeed, now dead; and we are glad to say, that it evidently checked the progress of the disease, and, at least, made the last moments of existence more bearable. After ten days daily application, the pulse was reduced from one hundred and twenty to under eighty; the quantity of expectoration was checked; the power of expectorating was increased; and the system was so tranquillized that the patient not only repeatedly went to sleep during the operation, but was enabled to go on, almost comfortably, from

the irritation being checked, until he was reduced to a state of emaciation and weakness which we have never seen exceeded.”\*

In consequence of the benefit that was afforded in this case, I was induced to employ Galvanism to alleviate the sufferings of consumptive patients. In several instances which have subsequently occurred in my practice, the progress of pulmonic disease was evidently retarded, and very material relief was afforded, but all those cases eventually proved fatal.

I always made a point of ascertaining the state of the lungs, by Lanec’s instrument, called the Stethoscope; and had in these cases detected ulcerations in one or both lobes of those vital organs.

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\* *Consumption of the lungs.*—“ Mr. La Beaume has applied the Galvanic fluid to a lad in the last stage of pulmonary consumption, under the direction of an eminent physician, with the most evident advantage. A few applications reduced the pulse from 120 to 80,

*Dropsy.*—In some cases of this disorder Galvanism has afforded benefit in a less or greater degree, according to the causes which induced the disease. As I have had but few opportunities of employing this remedy in dropsy, I cannot report many instances of recovery.

*Hydrocephalus*, dropsy of the head,—and *hydrocephalus internus*, or dropsy of the brain.—In these disorders I have had no experience of the powers of Galvanism, and I am not, therefore, competent to say, how far that agent may be useful. Should I ever make a trial of Galvanism in these cases, I shall think it my duty to publish the results in some of the medical journals for the information of the profession.

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considerably allayed the cough, and abated the fever. The organic disease, however, advanced, and terminated fatally. The physician in attendance gave it as his opinion, that the remedy had evidently prolonged life, and rendered it tolerable.—See the *Gazette of Health*, for September, 1820, page 644.

*Hydrothorax*,—dropsy in the chest.—In this incurable malady, I have more generally succeeded in affording relief than in any other species of dropsy. In some instances both the patient and myself were sanguine in our expectations of ultimate recovery, but a suspension of diseased action was all that was obtained from Galvanism ; and I know of no case in which a cure was effected. The morbid appearances after death, in several instances, fully proved that the disease was occasioned by a considerable structural mischief of the vital organs, and of both the thoracic and abdominal viscera,—See the cases in the appendix.

*Ascites*,—dropsy of the belly.—I have not had a single case of this malady to which I applied the Galvanic influence, and, therefore, I can only infer its utility in this disease from its beneficial effects on *annasarca*, and other species of dropsy.

*Tympanum*, or windy dropsy of the belly.—Only one case of this disease has occurred in my practice.

A medical man, who had not long been afflicted by it, after having tried various remedies to little purpose, obtained very considerable relief from Galvanism; but he failed to perfect his recovery, being obliged to go into the country on some urgent business. I am unacquainted with the final result of his case, not knowing where to address him.

*Encysted dropsy*,—dropsy of the ovary.—I have had but four cases of this almost hopeless disease. In one aged and two young females Galvanism was tried without any advantage; but in a lady, aged forty-five, who had for more than fifteen years suffered under an incysted dropsical tumour, Galvanism, in conjunction with Electricity, was found singularly efficacious. This patient, on her first applica-

tion to me, had all the appearance of a female in the last stage of pregnancy ; but after one month's application of Electricity she was reduced in circumference about two inches. Galvanism was then administered for a month, when a further reduction became evident to the extent of three or four inches more. Thus by the alternation of Electricity and Galvanism for several months, this lady was restored to nearly her natural size : the irritation of the neck of the bladder, and the habitual confinement of the bowels, which had continued during a long period, were removed, and her general health is now perfectly good.

*Hydrocele, or dropsy of the scrotum.*— Only two cases of this disease have come under my treatment, in both of which the patients derived the greatest advantage. In the apparently more favourable case, relief only was obtained ; and a perfect recovery was effected in the other, where but little benefit was expected.

*Hydatids.*—In this species of dropsy, lymph is contained in little bags, connected like a bunch of grapes, and is found sometimes in the liver and uterus. I had a lady under my care some years ago for a diseased liver, who informed me that, prior to her recovery, she had passed an immense quantity of hydatids, both from the bowels and the uterus, after she had made but a short trial of Galvanism.

In *annasarca*,—dropsy of the cellular membrane, (sometimes also called general dropsy,) evident by a watery swelling of the limbs from a want of action in the lymphatic system,—Galvanism has produced copious secretions of the skin and the kidneys, and gradually removed this complaint.

A middle-aged man, who had suffered some time from an obstruction of the liver and a dropsical affection of his legs and thighs, extending even to the scrotum, was, in the course of a very short time,

perfectly relieved, and eventually cured of the complaint, after the primary disease was removed.

*Scrofula*,—king's evil,—is a malady of a peculiar nature, supposed to be an idiopathic or primary disease, arising from an acrimonious state of the blood and a morbid condition of the lymphatic glands. This disorder sometimes attacks not only the external parts of the body, but frequently the organs of vitality, and generally terminates in tubercular consumption. The first indication of a latent scrofulous disease is, little hard and indolent swellings of the conglobate, or simple, glands of the neck and chin, the breasts of females, or other glands of the body of both men and women. If these tumours be not dispersed they will remain a long time before they are formed into abscesses, then suppurate and degenerate into obstinate sores; and, after being healed, leave very unsightly scars. Whether scrofula is connected with a primary derangement of

the digestive functions or not, or whether it be an hereditary malady or an acquired disorder, is a matter of little consequence ; for the curative intention is always accomplished by restoring the purity and vigour of the circulation, and by giving tone and energy to the constitution. These ends are best effected by promoting healthy digestion, and by exciting the action of the lymphatic system. As Galvanism possesses a peculiar influence on the glandular as well as the nervous system, which must be evident from the facts I have already stated in the preceding pages, I have found it effectual not only in the removal of scrofulous affections, but in the cure of scrofulous diseases. This is a matter of vast importance to society at large, as this formidable complaint is more generally prevalent in this than, perhaps, any other country in Europe ; a fact that has been attributed to our cold, humid, and variable climate, and our habits of life. Medical writers, of the first reputation, have recommended the local application of both

Electricity and Galvanism for the removal of strumous affections of the glands ; and I have, in numerous instances, applied these agents in various forms with all possible advantage. The effect soon produced on these hard and indolent tumours was either dispersion or suppuration, according to the state of the glands. But as I never considered the removal of the local affection, arising from an accumulation of morbid matter in certain parts, whether dispersed and taken up into the system by absorption or discharged from an abscess, the radical cure of a constitutional disease ; I was, therefore, naturally led to employ Galvanism to the vital organs, as striking at the root of the disease ; and I am happy to say, that I have, in the majority of cases, fully succeeded in accomplishing my object. I may further add, that three fourths of the diseases which have come under my treatment have had a scrofulous origin, and had existed for years in a latent state, and unperceived by the patients. A few facts will exemplify my remarks.

A middle-aged man, who for some months had several small, hard, and indolent tumours under the chin and in different parts of the neck, which no local applications could remove, was fully cured in a few weeks by the topical administration of Galvanism.

An apparently healthy young gentleman, who suffered much from enlarged and tumefied glands, was sent to me for the application of Galvanism. The abscess discharged in a very short time, and the patient was soon well. The constitutional treatment of the malady having been neglected in this case for some years, the disease attacked the vital organs, baffled the effects of all medicinal means, and the patient soon after died of pulmonary consumption.

A boy about nine years old, who was affected with a scrofulous tumour of the neck, which disfigured his face, injured his sight, and destroyed his hearing, was

sent to me by an eminent surgeon for the application of Galvanism, as the previous topical and general treatment of the complaint, skilfully employed, had produced no beneficial results. The local stimuli of Electricity and Galvanism, after a fair trial, rendered him no essential service ; I then exhibited Galvanism as a constitutional remedy, and in a few weeks I fully succeeded in curing the patient.

A married female had suffered extremely for some years from a painful tumour of the breast, which gradually increased in size and hardness, notwithstanding she had recourse to frequent applications of leeches, and other local as well as constitutional remedies ; after a few trials of Galvanism, internally administered, the pain was relieved, and she was surprized to find her tumour considerably reduced and softened, and which disappeared on the recovery of her general health. Her complaint was evidently connected with the derangement of the hepatick organs.

A gentleman, who had had for some years a very deep scrofulous sore in a certain gland, which had destroyed one half of it, and which could not be cured by the internal or external remedies he had used, under the direction of his medical advisers, informed me, that, after a fortnight's course of Galvanism, directed to the digestive organs, he received a considerable improvement, and before the expiration of a month the local ailment was perfectly cured ; but I am sorry to add, that his general health was not fully regained, which he candidly attributed to his irregular habits.

A few remarkable cases of scrofulous affections of the hip and knee will be given in the appendix.

*Diseased mesenteric glands.*—In this complaint, to which children are most liable, I have not had any opportunity of trying the powers of Galvanism, and cannot, therefore, say how far it would be of

use ; but I think it is certainly worth the trial.\*

*Scurvy.*—Very few cases of scorbutic disease have occurred in my practice ; most of them were very slightly and imperfectly marked, and could only be traced to the disordered functions of the alimentary canal. The red pimples and cuticular irritations on the breast and the limbs, as well as the visicles, which contained aerid lymph, soon disappeared when the general health was restored. In proof of this I shall state a few facts under the head of cutaneous diseases, and also give two striking cases in the appendix.

#### DISEASES OF THE SKIN.

Most of the chronic cutaneous diseases, which have come under my treatment, have

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\* Three very remarkable cases of scrofula, in which Iodine was exhibited with advantage by A. Delisser, Esq.

been most decidedly connected with constitutional disorders, principally those of the chylopoetic organs; generally inducing debility and a cachectic state of the system, a peculiar irritability of the skin, and obstruction of insensible perspiration. Dyspepsia, with eruptions in different parts of the face and body, like yellow and livid spots, particularly about the breast, have been soon removed by the influence of Galvanism alone, directed to the digestive organs.

A young lady, who had for four years suffered from indigestion, which was attended with this peculiar affection of the skin, was perfectly cured of the malady seven years ago, and has ever since been free from the complaint.

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surgeon, are recorded in the Edinburgh Medical and Surgical Journal, for January 1824, page 230:—to which I refer my readers.

A gentleman, who had for a long time been subject to large pimples on the forehead and neck, and painful boils in different parts of the body, was, after a course of Galvanism, relieved from the disease, and has not for some time had any recurrence of it.

*Herpes.*—I have had very few cases of herpetic eruptions, which were not combined with great constitutional derangement. The internal administration of Galvanism, by its sympathetic influence on the skin, generally removed these affections after the primary disease was subdued.

In a recent case, a patient who was suffering extremely from a severe herpetic affection of the legs and feet, which had baffled the powers of all the remedies prescribed, derived the greatest relief from Galvanism, applied to the system only; and was perfectly free from the complaint; but as the patient did not persevere in its use long enough to obtain a complete

recovery from her constitutional malady, she has experienced a relapse.

### GOUT.

Gout is a painful disease, occasioned by a morbid action of a peculiar character, inducing an acute or chronic inflammation of the membranes of the affected joints ; which, in the acute stage of the disease, is attended by symptomatic fever. That there is a predisposition to gout in some subjects, there can be no doubt ; but that the principal exciting cause of the complaint can be distinctly traced to some disordered action of the digestive organs is the established opinion of the most eminent writers, and the most experienced practitioners of the age. As indigestion often produces a plethoric habit of body, irritability of nerves and diminution of strength, and renders dyspeptic subjects liable to gout,—the treatment which is most effectual in the cure of the primary

disease, must, according to the nature of things, be most beneficial in the removal of the secondary disease. It is therefore on this principle that the sanative powers of Galvanism are applicable to the prevention as well as to the cure of gout. In the acute stage of this malady Galvanism is counter-indicated, and should not be employed ; but to the chronic stage of the disease it is peculiarly adapted, and I have administered it as a constitutional remedy with the greatest advantage.

*Atonic gout.*—Where a gouty diathesis exists in the system, without any inflammatory action of the joints, indicated by many of the symptoms of indigestion ; and where the constitutional energy is so much depressed that it cannot localise the disease,—the influence of Galvanism has more generally cured the complaint than brought on a regular paroxysm. This is a fact of which I have abundant proof ; and I could describe many cases that would illustrate my remark, but one must suffice.

A patient consulted me some time ago for disordered and painful respiration, to whom I applied Galvanism. In a moment his breathing became easy, and the pain of which he complained was instantly removed to the ball of the great toe. Pursuing my usual plan for a few days the gouty action ceased, when his general health was regained.

I have had a very few instances where the exhibition of Galvanism has induced a regular paroxysm of the disease.

A middle-aged man, who had for many years been suffering from atonic gout and had recourse to Galvanism after the recovery of his digestive functions and while in apparent health, experienced a sudden and severe attack of gout, which was cured by the ordinary treatment. This occurred some years ago, since which, I understand, he has been perfectly free from the complaint.

*Misplaced gout.*—Several instances have occurred in my practice of chronic gouty inflammation of the stomach, liver, and bowels, which almost immediately yielded to the influence of Galvanism.

A gouty subject, who complained of a violent pain in the region of the liver, which extended to the bowels, and who had, at times, suffered extremely from violent spasms in the stomach and from giddiness and pains in the head and the eye-balls, applied to me for relief. The patient being under very considerable excitement at that time, I very cautiously employed a feeble Galvanic power to the region of the liver; when, to my astonishment, he assured me, that it immediately removed the pain he had felt in the side and bowels to the great toe of the right foot, so that he was hardly able to walk across the room, and was conveyed home in a coach. On the following day he came to me on foot, and after a few

applications of Galvanism he was restored to robust health.

*Retrocedent or misplaced gout.*—I have had a few cases in which the gouty matter has evinced itself as a subtle principle, being suddenly translated from the extremities to the organs of vitality.

An elderly gentleman, who for years suffered extremely from regular fits of gout in the hands and feet, applied to me for the cure of his deafness. As the sense of hearing in his left ear was nearly lost, I administered Electricity to restore the tone of the auditory nerve. In three weeks he was able to hear the ticking of a watch at arm's length, which he was not before able to do in close contact, and was fully confident of his recovery. The very next day he called on me in the greatest despair, and said, that all the benefit he had obtained was altogether lost, and that he was more deaf than ever. This he attri-

buted to an attack of gout in the head the night before. A few days after, he had a regular paroxism, and then regained his hearing to the same degree which he had before obtained. After the patient recovered from that fit of gout, and while he had another attack of misplaced gout on his lungs, which sometimes shifted to the abdominal viscera, I employed Galvanism for a fortnight; which effected a perfect restoration of his health, and a freedom from gouty paroxisms for several years.

Many other cases have occurred in which the exhibition of Galvanism, after a gouty paroxism, has prevented its usual periodical recurrence. I have seen the most formidable paroxisms of gout in all the joints of the body, and I have, in many instances, afforded singular relief by the warm-air, general, and air-pump vapour - baths (medical agents which I shall hereafter notice); but I have never administered Galvanism while the patient was in a state of inflammatory excitement.

A middle-aged man, who applied for my assistance, had suffered for a series of years the most violent attacks of regular gout, and was often confined to his bed, for weeks together by a succession of gouty paroxysms, which first affected the elbow, wrist, and right hand, and then the joints of the left hand, afterwards the knee and foot of the right leg, and then the joints of the left leg ; I administered the air-pump vapour-bath, which afforded him the greatest relief in a few days. Soon after this he commenced a course of Galvanism, strictly attended to diet, and occasionally took a little rhubarb and magnesia. These means, in a few weeks, restored his general health, and, for years after, he escaped those periodical attacks of gout to which he had almost been a martyr. I must further add, that, though the ankylosis or enlargement of his joints still remained, his muscular powers were considerably increased, and he could walk a great distance without any pain or fatigue.

*Rheumatism.* — Rheumatism is also a painful malady, arising from an inflammatory affection of the membranous and tendinous parts of the muscles and joints. In the acute stage of this disorder, which is sometimes called rheumatic gout, it bears a strong resemblance to gout, but differs from it in a few particulars ; especially in its affecting the larger joints of the body, as the shoulders, the hip, and the knees, attended with a benumbed sensation, gnawing pains, and a swelling of the parts. While the complaint is accompanied by fever no stimulants can be applicable, but active medical treatment must subdue the urgent symptoms. In the chronic stage or form of the disorder, both Electricity and Galvanism have been found very effectual. That rheumatism is often occasioned by accidental and external causes, there can be no doubt ; but that the predisposition to the disease frequently arises from the state of the digestive organs, I can abundantly prove by

a variety of cases, which have come under my treatment ; in which, rheumatic pains have been immediately removed by correcting the acetous fermentation of the stomach, by absorbents and alkalines, and by stimulating the action of the liver with the Galvanic fluid, without any topical or direct application to the affected parts. This fact shall be hereafter illustrated by a few examples.

Rheumatic affections of the head and of the shoulders have often been symptomatic of the disordered state of the stomach, and the torpid condition of the liver ; and, in numberless instances, the exhibition of Galvanism to those organs has immediately removed those anomalous pains, as will appear from some of the cases in the appendix.

*Lumbago.*—The same effects have followed the administration of Galvanism in this complaint, on several occasions.

In one case, where the ailment had continued for years, and incapacitated the sufferer from taking ordinary exercise without feeling additional pain, the internal administration of Galvanism, for a few weeks, afforded perfect freedom from the complaint.

*Sciatica*, or hip-gout,—has also yielded to the same mode of treatment, in the generality of cases, when the digestive functions were impaired.

A striking case of this description occurred in my practice, four years ago, in an elderly man, who had been lame of the right leg from an affection of the sciatic nerve ; the limb had lost both its strength and substance, though the general health was not materially affected. The patient had consulted an eminent practitioner who sent him to me for the topical application of Galvanism ; this afforded him no benefit, but rather increased his lameness after two or three trials. I then suggested the

propriety of attacking the hepatic organs, and administered Galvanism for three weeks with admirable effect; in a month his stomach and liver performed their functions, and the patient was able to lay aside his stick and walk with perfect ease. The subsequent use of the air-pump vapour-bath rapidly increased the fleshy substance of the leg and thigh, which had been much wasted.

The direct application of Galvanism in cases of sciatica, or rheumatic pains in any part of the limbs, has been found equally beneficial when the complaint was altogether a primary malady, and unconnected with any derangement of the alimentary canal.

A remarkable case of this character occurred last year. A gentleman, who had an apparently slight attack of sciatica, which for a long time greatly enfeebled the left leg, and incapacitated him from taking his usual exercise, and produced a

considerable diminution in the size of the limb, ineffectually tried various constitutional and local remedies, including Galvanism directed to the system and Electricity to the parts affected. He was perfectly cured by a few applications of Galvanism, passed from the spine along the course of the sciatic nerve to the leg and foot ; and I am happy to add, that his recovery is as permanent as it was complete.

*Mercurial disease.* — In this disorder, which is attributed to the over-exhibition of mercury, as well as to its judicious use, in peculiar constitutions inducing a disease termed by some *syphiloidia*, or *pseudo-syphilis*, which affects the joints and glands, Galvanism has been applied with singular benefit, both in the cure of the general disease and the local ailment. In mercurial sore throats, swellings and ulcers, as well as in the affections of the tendons and bones, this remedy has been exceedingly useful. Many cases have

occurred in my practice, which, as they were unattended by any remarkable peculiarities, I shall not detail; but merely observe, that in some cases the constitutional treatment alone effected recovery; and in others, the topical application of Galvanism removed the pains occasioned by mercurial rheumatism. Although the reanimating powers of Galvanism have been sensibly felt in many debilitated constitutions, and its peculiar energy in rousing torpid glands, and in increasing nervous power, has been fully experienced by those whose habits of life were pernicious to health, yet I have too frequently seen the consequences of those indiscretions defeat my efforts to re-establish perfect health in those subjects, who, but for their intemperate passions, would have enjoyed freedom from disease. In these instances, when a mercurial course was rendered necessary, a very few applications of Galvanism, assisted by very slight doses of calomel, have produced effects on the gums and salivary glands, and fully ac-

complished the curative intention in one half of the time which would be required by the separate use of mercury. That Galvanism quickens mercurial action is an incontestible fact, which I can prove in numerous instances that have occurred under my immediate observation, as well as that of several members of the profession, from whom I have received the recommendation of patients; and though I cannot, and would not at present, say that the internal exhibition of Galvanism could effect a permanent cure in syphilis, yet, from my experience in a variety of cases, I venture to affirm, that it will most materially aid a mercurial course, and shorten the period of its employment; and, what is of greater importance, counteract the pernicious and distressing effects of this mineral poison on the nervous system, by supporting the constitutional vigour of debilitated and scrofulous patients, in whose peculiar habits the effects of that remedy are often as destructive as the disease itself. I am

the more desirous of making this communication to medical and surgical practitioners, as well as to the intelligent public, because the treatment of that complaint forms no distinct part of my practice, though it occasionally comes under my observation; and I have been obliged to administer Galvanism, in combination with mercurials, in the cure of that formidable disease. Those who know how to appreciate my remark, founded on actual experience, will satisfy themselves on that point, by a fair trial of the combined use of the mercurial unction and the Galvanic influence, daily administered, till ptyalism is produced, and will then observe the very different effects that follow even a short course of mercury, exhibited in its mildest form, and the plan I have suggested. I again claim the attention of the medical profession to the hint which I have given, and hope that a due regard for the saving of lives, and the devastation of constitutional strength, will lead them either to confirm or refute my observation, result-

ing from an experience, which, I admit, has not been very extensive.

*Disorders peculiar to males*, arising from constitutional and local causes, such as spasmodic strictures, sartocele, varcocele, etc., in which the Galvanic influence has proved singularly efficacious, I have described in a separate and small publication, which may be procured at the publisher's; for, as this work is intended for general perusal, I wish to avoid the communication of all those facts, however important they may be, which might in the slightest degree lead to the imputation of indelicacy.

#### **DISORDERS PECULIAR TO FEMALES.**

In those disorders to which females are liable in different stages of pregnancy, neither the Electric nor the Galvanic influence should be employed, as these excitants have a peculiar action on the

uterine system, and would, most probably, occasion abortion. I therefore urge it on pregnant women not to resort to those means, on any account whatever.

In various other disorders to which delicate females of a scrofulous habit are subject, as fleshy tumours, polypus, cancerous and organic diseases of the womb, Electricity and Galvanism are totally inapplicable, and may be very injurious; but it is of vast importance for females to know, that it is peculiarly adapted to cure those complaints which are connected with their natural and periodical indispositions, even after the failure of the most judicious medical treatment.

In *chlorosis*,—green sickness,—which often precedes the age of puberty, and which arises from a constitutional derangement occasioned by indigestion, defective nutrition, or diminished energy of the vital powers, Galvanism has been found very efficacious; and in most of those

cases which have come within my practice it has fully restored the digestive functions, increased arterial action, and produced that salutary result which has perfectly cured the disease.

A young female about eighteen years of age, who had a more healthy appearance and less freedom from the symptoms than usually characterize green-sickness, and had for more than two years tried the ordinary remedies, under various practitioners, as well as horse exercise, change of air, etc., without any effect, was sent to me for the employment of Electricity. After two separate and unsuccessful courses, between which there was an interval of some months, she came to me a third time for the administration of Electricity. Being fully satisfied that the exhibition of Galvanism to the system would be more beneficial in her case than any local excitement of the uterus, I administered that remedy to the digestive organs for some weeks, which eventually proved efficacious.

In one instance, in which Electricity and Galvanism were long tried by the recommendation of a medical man, the cause of failure was clearly ascertained to arise from a peculiar organization ; therefore, these remedies were necessarily inefficient, not being properly applicable to the case.

*Amenorrhœa*,—the interruption of periodical relief.—Irregularity with respect to time is of frequent occurrence in young females, and is not of much consequence ; but when serious causes occasion obstructions so as to impair the functions of vitality, immediate attention should be given to the removal of the primary disease ; after which, should the obstruction continue, Electricity or Galvanism ought to be resorted to, for the purpose of removing the obstruction or constriction of the uterus, and restoring its healthy action.

A middle-aged female, apparently healthy, but who had for nearly twelve months suffered extremely from obstruction, was

sent to me by a physician-accoucheur, about seven years ago, for a trial of Electricity. The most powerful emmenagogues, as well as other medicines, had been tried without effect. A fortnight's application of Electricity produced no beneficial result. Galvanism was then employed to the digestive organs; her dyspeptic affections yielded to its influence, and the tone of the lower bowels was fully regained: after this, Electricity was again administered for a few days, and the patient obtained perfect recovery; and since that time she has not had any recurrence of the disease.

In some cases, obstructions occasioned by cold, fright, etc., have been immediately removed by the local excitement of the Electric and Galvanic influence. Here I must observe, that no class of female maladies has been more rapidly and effectually cured by these philosophical remedies than that of obstruction, arising either from constitutional disturbance or some

local affection ; and in the whole course of my practice, which has been extensive in these complaints, I have met with only four cases in which Electricity and Galvanism failed to produce the desired effect. In two of these, the digestive organs were so much diseased that the patients could not obtain adequate nourishment from food, and, consequently, could not make enough blood, and were, therefore, reduced to a state of great emaciation. In the other two cases, no evident cause of failure could be assigned.

*Menorrhagia*,—too frequent, too long, or too copious visitations ;—if occasioned by organic disease, Galvanism should not be resorted to ; but if they arise from disordered action of the abdominal viscera, debility of the nervous system, relaxation of the uterus, or accidental causes affecting either the mind or the body, the usual treatment, as in the former cases, have proved efficient.

In several cases, where the lancet has been freely used; and where purgative, stomachic and tonic medicines most judiciously employed, and dietetic regulations strictly attended to, have failed, the salutary influence of Galvanism has fully succeeded.

A young lady of a very full habit, who was subject to this complaint in the greatest degree, and whose vital powers were so much reduced that the most serious consequences were apprehended, was perfectly cured by a course of Galvanism directed to the digestive organs and to the nerves of the spine.

*Dysmenorrhœa*, — difficult and painful feelings attending the ordinary course of nature, affecting the loins, back, bowels, etc.—This disorder is ascribed to a weak or spasmodic action of the extreme vessels of the uterus. It must be evident to the most superficial observer, that, as Galvanism has a specific influence in spasmodic affections and on the arterial system,

its general or local application must also be beneficial in this malady.

Among the various cases of this character I shall notice one which had for years baffled the efforts of the healing art.

A middle-aged female of a very delicate constitution, who had from the earliest period of her indisposition suffered extremely, at certain times, from the most violent spasmodic pains in her back and bowels, attended with giddiness, sickness, headache, and hysterical fits, which nothing but the largest doses of opium and asafoetida could relieve, obtained from a short course of Galvanism such decided benefit, that she has not since had recourse to any sedatives or anti-spasmodics whatever. The changes of condition from a single to a married life and from a married to a widowed state, and again to a married life, made no difference with respect to the nature and degree of her sufferings prior to the use of Galvanism.

In that critical period of life when the female constitution undergoes a great change, when the usual recurrences become irregular with respect to time and quantity, and the secretions assume an unhealthy appearance, the foundation of some general or local disease is often laid, that eventually proves fatal. At this precarious juncture, when the constitutional vigour should be supported to prevent a sudden cessation, which would, in certain habits, produce serious results, I have employed Galvanism with the best effects. In many cases in which the symptoms denoted a premature termination, Galvanism has fully succeeded in re-establishing the returns of nature ; which, again recurring regularly for some years, have gradually ceased without prejudice to the general health.

An unmarried female, about forty years of age, of a delicate constitution, who had been out of health for many years, and had for more than two years ceased to have

any periodical indispositions, after a trial of Galvanism made with the view of restoring the action of the liver, which was affected, again experienced the salutary returns, which regularly continued for several years ; and since their final termination she has enjoyed as good health as she did immediately after the Galvanic course.

In this, as well as in several other instances, I was not made acquainted with the peculiar situation of my female patient till afterwards ; and, consequently, my administration of Galvanism was made on the general principle of increasing the vital energy, and of rousing the torpid organs of the abdominal viscera ; but such were the effects produced.

*Leucorrhœa,—fluor albus.*—When this complaint is occasioned by a constitutional cause it requires a constitutional treatment, conjointly with local remedies, to effect a cure, which is, in most instances, very difficult. The indications of this

disorder are, white or coloured secretions, irregular with respect to time and quantity, and are sometimes foetid and so very acrid as to produce excoriations on the surrounding parts, without any inflammatory affection. Females, whose constitutions have suffered much from their peculiar indispositions, abortions, painful parturitions, or other causes inducing great depression of their vital powers and prostration of corporeal strength, are very liable to this disorder. As Galvanism is peculiarly applicable to restore the sunken energies of life, and as its effects on the secretory organs are evident from what I have already stated, I have found it also a most effectual remedy in this disorder, when no organic mischief has counteracted its sanative influence. In numerous cases have morbid secretions ceased, and natural and healthy secretions immediately followed a few trials of Galvanism. This fact I state on the authority of my female patients, many of whom were not a little surprised to obtain perfect recovery from

the mildest applications of Galvanism, directed to the vital organs, without any local application whatever.

In other disorders to which females are liable, as chronic inflammation, relaxation and falling down of the uterus, I have not had any opportunity of employing Galvanism ; but I do not hesitate to say that the most beneficial effects may be reasonably expected from its use, if those maladies be the result of constitutional and not of merely local causes.\*

After the Galvanic influence has been successfully administered to many females, who had been married for some years, with

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\* Two remarkable cases have come within my observation : the one was a lateral inclination of the uterus, in which Electricity proved very useful : and the other I shall briefly relate for the information of the profession. A young married female, who had three or four children, was so injudiciously treated during her last accouchment that nothing short of the extirpation of the

the view of curing the disorders common to their sex, their general health has been so perfectly re-established, that several of them have subsequently had children when such events could not reasonably have been expected.

As Galvanism ought not to be resorted to in those ailments which are connected with pregnancy, on account of the danger of occasioning undue uterine excitement and premature labour, neither ought it to

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uterus could save her life. This extraordinary operation was skilfully performed by a very able physician-accoucheur, and fully succeeded. The hæmorrhage which subsequently took place, and the necessary effects which resulted from a dangerous and long-continued sickness, induced the patient to seek relief from my remedies. Galvanism, being employed for five weeks, restored her general health, which she now as fully enjoys, after a lapse of about six years, as she did before the operation rendered necessary by her accouchment. This is one of the three cases which have occurred within the last hundred years. In two of these cases the operation was successful, and in the other it proved fatal.

be employed in those inflammatory maladies which attend on the puerperal state.

I beg also to observe, as the rule of my practice, that females, whose terms are not defective but abundant and natural, should, during the catamenia, suspend the use of Galvanism ; otherwise a too profuse result will be produced, which might weaken their frame and counteract the influence of the remedy. But when the vital energy is much depressed and long-continued excitement is clearly indicated, there should be no interruption of the Galvanic course, till perfect recovery is accomplished.

Galvanism may be most advantageously employed to females, whose physical strength is much reduced by the difficulties and sufferings of painful parturition. When the ordinary means have failed to restore the tone of the digestive organs and corporeal vigour, Galvanism has raised the sunken energies of many very

delicate women to the full standard of their former health.

I have also employed the Galvanic influence to several ladies very soon after their confinement, and have found, that it has not only cured the costiveness, induced by their previous condition, but it has also excited the sluggish bowels to regular action. It also immediately produced such effects on the mamillary glands as to occasion a copious secretion in the breasts, which I did not anticipate. Subsequent to this discovery I have applied Galvanism to three females, whose secretions were so defective, and their constitutions so delicate, that their medical attendants considered it absolutely necessary that they should cease to nourish their offspring. These patients, I am happy to say, were not only cured of extreme debility, but were enabled to fulfil the pleasurable duty of nourishing their children with an abundant flow of milk ; but, as my experience is limited to three cases

only, I cannot say that Galvanism will invariably produce the same results, though I am inclined to think it generally will have that effect; it may, however, be safely tried, provided it be judiciously administered, that weakly mothers may be rendered capable of giving to their infant progeny the support which nature designed.

### ASPHIXIA.

*Asphixia*,—suspended animation.—Only three cases of a presumed suspension of the vital powers have occurred in my practice, in which I failed of success, because the principle of life was not only apparently but really extinct, before I commenced the Galvanic operation. I am, however, fully satisfied, that Galvanism and the warm air-bath are most efficient means in the process of resuscitation. I recommend to my medical readers the perusal of a short but excellent treatise on suspended animation, by Professor Aldini, entitled, *General Views on the Application of Galvanism to*

*Medical Purposes*; and a valuable paper by Dr. De Sanctis, given in the *Medical Repository* about three years ago.

My improved portable Galvanic apparatus, designed to be used in suspended animation, I shall briefly notice in the appendix.

### LOCAL DISEASES.

This class of maladies must, in most cases, be defined as morbid affections of certain parts of the body, dependant on some constitutional derangement, and not as isolated diseases unconnected with the general system; unless they are occasioned by some accidental cause, are confined to certain members of the human body, and do not materially affect the functions of vitality.

*Faciei morbus nervorum crucians,—or tic dououreaux,—*is a most painful chronic

disorder, which generally affects the nerves of the face, and sometimes the nerves of the arms, legs, and thighs, attended by the most acute darting sensations, which recur so frequently, that the interval between ease and suffering is, in some cases, but momentary. Whether the seat of this complaint exists in the brain or in the nerves is very doubtful ; but the probability of its being a secondary disease may be inferred from the numerous instances of recovery, which have been lately effected by constitutional remedies, as carbonate of iron, sulphate of quinine, etc., which act on the general system ; and from the many cases of failure in which local applications, as well as the division of the nerves, have proved inefficient.

I have had very few patients suffering under a morbid affection of the nerves. Two cases were cured by Electricity and two by Galvanism ; in three cases partial relief was afforded, and in another the disease

continued unabated. A remarkable case shall be given in the appendix.

*Bronchocele—Goitre,—Derbyshire neck or Wen,*—is an enlargement of the neck, occasioned by a tumour between the trachea (windpipe) and the skin. Some have supposed this complaint to be a dropsical affection of the thyroid gland, and others a local disease ; but this singular malady, which is attributed to various causes, may generally be referred to a scrofulous action ; and has, in some instances, been cured by the exhibition of Iodine, and the remedies beneficially applicable to that disease.

I have had but three cases of this disorder in my practice. In an elderly female Electricity produced a considerable reduction of the enlargement ; in the case of a middle-aged man, Galvanism effected a cure ; and, in the third case, Galvanism afforded a considerable improvement of the general health, and an abatement of the local pains. In this last case Electricity

proved inert, and Galvanism checked the progress of the affection during its administration ; but, after its discontinuance, the tumour evidently increased, which nothing has been able hitherto to subdue. It must be observed that the complaint, in this case, had been coming on for more than fifteen years, and no means whatever, except the constitutional and local application of Galvanism, has afforded the patient even temporary relief.

*Tumours,—an enlargement of some gland or part of the body, without any great degree of inflammation..*

A middle-aged lady, who had an indolent tumour on the lower part of the bowels, derived the greatest benefit from the local stimulus of Galvanism, which nearly reduced the swelling to one third of its former size, and would probably have completely removed it, had she persevered in the use of Galvanism a little longer.

A gentleman had a large tumour occasioned by a violent bruise, which could be neither dispersed nor brought to suppurate by the means he had previously tried under the direction of his surgeons, but which was, in consequence of the constitutional application of Galvanism, soon absorbed, and disappeared during the recovery of his general health. To incysted tumours in the arms and lower limbs I have not employed Galvanism, conceiving it would be of no use whatever.

*Ulcus*.—ulcer.—I have not in a single instance made a local application of Galvanism to ulcers, because I apprehended that it would continue the discharge rather than heal the sore ; but I have, in many instances, found, that the constitutional administration of Galvanism has soon caused the most obstinate and long-continued ulcers to heal.

*Cancer*.—I have had but two cases of this dreadful disease ; one in a female whose

right breast was affected by a cancerous tumour, which was not matured to an ulcer ; at the request of the patient, I administered the mildest application of Electricity as a mere experiment ; and, finding it to increase rather than mitigate her sufferings, I discontinued its use. In the other case Galvanism was tried with the same result. I am, therefore, of opinion that neither of these agents can be of any use in cancer.

*Gangrene*,—mortification.—I have tried Galvanism only in one case, in which mortification had taken place in the feet and toes, and no hopes were entertained that the patient would recover ; in this solitary instance Galvanism, both generally and locally administered for a few times, proved unavailing.

*Sprain*.—A few slight cases of this ailment have been speedily cured by Galvanism ; and, in several severe cases, the limbs, which had been extremely weak-

ened by sprains and much wasted, were also restored to their strength and previous form by a short course of Galvanism.

Muscular and tendinous contractions and relaxations have also yielded to the influence of Galvanism, applied as a constitutional remedy, when the affection was, in any degree, dependant on the system ; but when the ailment was occasioned by some local injury, I have more frequently failed than succeeded in perfecting a cure.\*

*Vermes*,—worms.—The existence of these small animals in the human body is a malady which is not considered referable to any particular class of disease ; but,

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\* *Trismus* and *tetanus*,—locked jaw and general contraction of the muscles.—In these disorders, which very rarely occur, I have not had any opportunity of trying the powers of Galvanism ; though I am fully satisfied of its efficacy in these formidable complaints from the testimony of Dr. Wilkinson, who has written on the subject.

I think, that they may generally be attributed to indigestion and fæcal accumulation in the intestinal canal. Three remarkable cures of worms shall be given in the appendix.

### DYSÆSTHESIÆ.

*Dysæsthesiæ*,—is an order of disease, denoting the partial or total loss of one or more of our senses ; sight, smell, taste, feeling, or hearing.

*Blindness*,—must either be organic or functional ; if it be occasioned by malformation or structural change of the component parts of the eye, either by accident, disease, or wrong curative treatment, the loss of sight is irremediable. Galvanism is not beneficially applicable to blindness arising from an idiopathic or acute inflammation of the tunic and appendages of the eye, as in ophthalmia ; nor from a structural change, as congenital and advanced cataract, preternatural growth and

excrescences of the outer coats of the eye, opacity of the cornea, etc.

In impaired or lost vision, arising from the disordered functions of the abdominal viscera sympathetically affecting the brain and the organs of sight, the Galvanic influence has been employed with the greatest advantage, both to the primary and secondary disease.

*Nyctalopia*,—night blindness,—is an affection of the retina and optic nerves, occasioned by strong sun-light, which produces great dimness of sight at night. This malady is more prevalent in hot climates, and especially in Barbary, where both strangers and natives are alike affected by it. Several cases, which have come under my observation, have, to a certain extent, partook of the character of nyctalopia; for many patients, who could see tolerably well in the day, have experienced more than common difficulty in distinguishing objects at night. When this imperfection

of sight has been occasioned by indigestion, nervous debility, or too great exertion of the eyes in looking at objects in a strong light, the exhibition of Galvanism to the digestive organs has generally cured the ailment.

The eyes of a gentleman, who had had the strongest sight and could see distant objects both in the day and night with remarkable acuteness, became excessively dim at night, especially during the summer months ; this he attributed to a disorder of the stomach and liver, under which he had suffered for a considerable time, and to his habit of reading by the window when there was a strong sun-light. After the usual treatment had failed to remove his complaint, Galvanism not only succeeded in curing his stomach and liver disorder, but fully restored his sight to its former strength.

*Defective vision.*—When the sight has become enfeebled from debility of the

retina and optic nerves, or from long fasting, early excesses, too great exertion of the visual powers by candlelight, etc., the constitutional application of Galvanism has, in many instance, perfectly restored the general health as well as the visual powers. I could state many facts illustrative of this remark, but one must at present suffice.

A gentleman who was past the meridian of life applied to me for the cure of his deafness, which I considered to be a nervous affection, occasioned by the deranged state of his stomach and bowels ; after having exhibited the Galvanic influence to the digestive organs for nearly a month, the patient, though his deafness continued as great as ever, regained his digestive powers and obtained a most important benefit, for which I had not designedly applied the remedy, viz., the recovery of his sight, which was defective, and was enabled to lay aside his spectacles (of strong magnifying power), being then able to see better

without than with them. Therefore it is probable that his blindness was functional and his deafness organic.

*Morbid affections of the sight.*—I have had three cases of this malady in persons who saw objects inverted, or doubled. As these patients were sent to me by medical men for the administration of Electricity, I applied that remedy agreeably to their wish; and no trial of Galvanism was made. I am persuaded, that the exhibition of Galvanism to the system would have been much more efficacious than the local application of Electricity. In one case of double sight I ascertained that the patient was cured; but of the result to the two other patients I can give no information, on account of their sudden departure from town. These affections of sight, as well as the false perceptions of dyspeptic and nervous invalids, whose morbid imaginations have induced them to believe that they saw ghosts, spectres, etc., have been cured by medical treatment calculated to

remove the diseases of the stomach, which sympathetically affected the brain.\*

*Gutta serena* or *amaurosis*,—nervous blindness,—from paralysis occasioned by compression of the optic nerves, or from an over-distention of the blood-vessels of the brain, impeding the flow of nervous influence from the sensorium to the retina, and impairing the conducting power of the nerves. In the former case the mischief is a suppression of power; and in the latter, a loss of power. The united operation of these two causes not unfrequently produces a change of structure in the nerves, which eventually become obliterated. The remote cause of this worst species of blindness is apoplexy, sudden and frequent determination of blood to the head, vascular fulness, congestion of the

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\* This fact is fully illustrated by several interesting cases in a small work, by Dr. Alderson, on the *Rhus Toxicodendron*, with an Essay on *Apparitions*.

brain, defective energy of the nervous system induced by high living, disordered state of the digestive organs, excessive indulgence in sensual pleasures, or some other cause which impairs the vital functions and destroys the equilibrium of the circulation.

The progress of nervous blindness is generally slow, when it is occasioned by some derangement of the abdominal viscera ; but the loss of sight is rapid when it arises from a primary disease of the head, as from a *coup de soleil*, apoplexy, etc. In the former case, the privation of sight is more likely to be perfectly cured by the employment of Galvanism to the system, than, in the latter, by its topical application. In several cases of *gutta serena* in young, middle-aged, or old people, I have administered Galvanism with the best effects ; in some cases, when the patients had little or no sight from dyspeptic disease, I have effected cures by its internal exhibition ; while in others, when the general

health was exceedingly good, and the visual powers nearly lost, the topical application of Galvanism did little or no good ; hence it may be reasonably inferred, that the highest degree of functional derangement is more remediable by the Galvanic influence, than the lowest degree of structural or organic disorder ; in the former case, blindness may be considered as a local affection, but in the latter, a local disease. The Galvanic course has in these cases been short or protracted, according to the nature and duration of the malady ; in a few instances cures were soon effected, while in others the process was rendered very tedious, both to the patient and myself. As I shall record some cases in the appendix, I shall illustrate the foregoing remarks by only the following facts.

A young lady, who had for some time been blind in the left eye, a middle-aged man who had nearly lost the sight of both eyes, and an elderly gentleman who had been totally blind of the right eye

for ten years, fully regained their sight by the exhibition of Galvanism to the digestive organs ; and, in the progress of recovery, the improvement of their sight was exactly correspondent with the amendment of their general health. A gentleman, whose blindness was occasioned by a defective energy of the optic nerves from intense application to minute objects, but whose health was tolerably good, was, after a tedious course of Galvanism topically applied, restored to useful sight but not to his former visual powers.

*Chronic inflammation of the eye.*—I have had several cases of chronic inflammation of the eye, occasioned by syphilis, scrofula, and accidental causes, which had materially impaired the sight, and which I have succeeded in curing by the general and local application of Galvanism. In acute inflammation the topical use of Galvanism is inadmissible ; but I have, in many instances, administered the Electrical aura with the greatest advantage.

A middle-aged man, whose sight was nearly lost from syphilitic inflammation, was soon restored by the administration of Galvanism to the system. A young gentleman labouring under a scrofulous affection, who had a high degree of chronic inflammation in the left eye, which entirely suspended the visual power, after a long course of medical treatment which afforded him no relief, was perfectly cured by Galvanism in a fortnight, and has not had any recurrence of the complaint.

A patient whose right eye was nearly destroyed by a ball thrown from a racket, and another, whose eye was very seriously injured by a wine-bottle thrown at his head, were sent to me by an eminent oculist, who had subdued the acute inflammation by topical bleedings and purgatives. In these cases the local application of Galvanism not only removed the chronic inflammation, but gave tone to the organs of sight, and fully restored the visual powers.

*Purulent discharges from the eyes.*—I have not had any opportunity of making a fair trial of Galvanism in this malady; and in the only two cases which have occurred in my practice the cures were effected by Electricity.\*

*Cataract* is an opacity of the chrysaline humours of the eye, which obstructs the light from passing into the retina, and suspends the power of vision. I have had but four cases of this description. A middle-aged lady, who had an incipient cataract formed on the left eye, that greatly impaired her sight, was cured by Galvanism in a few weeks. Two elderly ladies had

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\* An infant, six weeks old, had a purulent discharge from the eyes immediately after its birth. All the usual means had been tried without advantage, when I administered the Electrical aura, for about ten days, which perfectly cured the child.—A young lady, who suffered under a disease of the lachrymal gland for several months, tried Electricity, which I applied in its mildest form to the affected part for three weeks, and it perfectly cured the complaint.

cataracts formed on both eyes; the daily application of Galvanism for three weeks arrested the further progress of the disease in one case, and not in the other. In the fourth case the operation of depressing and dividing the chrystraline lens was skilfully performed, and Galvanism was afterwards employed, which produced a most rapid absorption of the cataract, and the sight in a short time was restored.

As I have not had any case of the thickening of the aqueous humour of the eye, I cannot speak confidently of the utility of Galvanism in that affection; but I think it must be more efficacious in that complaint than in cataract, for it is reasonable to suppose that an inspissated fluid will be more readily absorbed than a soft substance.

I must conclude this subject by noticing an extraordinary case of impaired sight, from a peculiar affection of the upper eyelid, which was not *entropia* or

inversion of the lid. A lady, who was the subject of this affliction, had been suffering for some time from an unnatural growth of hair in the interior of the right eyelid, which incessantly irritated the coats of the eye, and very frequently obliged her to remove these superfluous hairs, which occasioned considerable pain. After a few applications of Galvanism her sight was nearly restored ; but, as I was apprehensive that no permanent good would result from the remedy, I recommended her to consult an oculist, who advised her to have an excision of a certain portion of the lid, which he declared to be the only certain cure. To this the lady refused her consent ; and when I called upon her, some months after, I was happy to find that though her malady was not cured, yet the improvement she had experienced from Galvanism still continued.

*The privation of smell and taste.*—These senses are in general mutually affected, and the loss of both is occasioned either

by paralysis, a morbid condition of the olfactory and gustatory nerves, or by an inflammation or a disordered state of the digestive organs. When smell and taste are diminished from catarrh, the affection is soon cured by restoring insensible perspiration ; but in the more obstinate cases, where the deprivation of each sense was greater, the administration of Galvanism to the digestive organs has been found efficacious. In every instance that has come under my treatment, except one, this affection has been cured without any local application of Galvanism. In two cases the senses of smell and taste were exceedingly depraved ; the most agreeable odours and flavours produced faintness and nausea, while the most offensive, such as the smell of assefœtida, and the taste of putrid meat and vegetables, were most agreeable. A gentleman, who had experienced this peculiar affection, was cured by the employment of Electricity to the foot, to induce a regular paroxysm of gout,

which it effected in two applications; clearly proving that the morbid condition of the nerves arose from the derangement of the digestive organs and from a gouty action in the system.

*The diminution or total loss of feeling,* in different parts of the body, may also be referred to the same causes. The efficacy of Galvanism having been fully exemplified in paralysis, and in the disordered functions of the abdominal viscera, in the preceding pages, I have here only to observe, that the loss of sensibility in certain parts may also be occasioned by an obliteration or division of those nerves, which convey the nervous influence from the brain to the organs of sensation.

*The feeling of the limbs* becomes very frequently impaired after an attack of gout or rheumatism, and the adjacent glands throw out chalky matter, which induces ankylosis and stiffness in the joints. This

result Galvanism can prevent, but cannot cure.\*

*Paracusis, or surditas,*—deafness.—The privation of hearing is generally partial, and seldom total; it is occasioned by various causes, which act immediately or remotely on the ear. Deafness is either organic and structural, or functional and symptomatic; a primary malady or a secondary ailment. When deafness arising from mal-formation is accompanied by dumbness, or when a disorganization of

\* A remarkable case of the division of the sciatic nerve occurred in my practice, a few years ago. A young gentleman, whose sense of feeling from the knee to the foot, in the direction of the sciatic nerve, was totally lost; and whose power of raising his foot from the ground was considerably diminished, on account of the division of the sciatic nerve effected during an operation for the removal of a hard tumour just below the knee; was sent to me for the application of Electricity. Presuming the case was hopeless I tried Electricity as a mere experiment, and, directing the aura along the course of the sciatic nerve for a few minutes, it greatly

the external or internal parts of the ear has taken place in any healthy or unhealthy subject, the case is irremediable. Galvanism is inapplicable to acute inflammation of the meatus, or tympanum of the ear; also to herpetic eruptions, opacity or thickening of the drum, fungous excrescences, polipi, or carious state of the

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increased the morbid susceptibility of the patient. On the second day I passed a current of Electricity, in its mildest form, from the upper to the lower portion of the sciatic nerve for two minutes, which induced syncope. The patient, on recovering himself, declared, to the astonishment of myself and a medical gentleman who was present, that all impediment to natural and healthy feeling of the limb was perfectly removed, and that he could not only raise his toes and lift up his foot, but could use one leg as well as the other. This extraordinary recovery I attribute to the previous elongation and re-union of the sciatic nerve, and to the immediate removal of some obstacle that obstructed the transmission of the nervous influence from the brain to the nerves and muscles of the limb. The faintness, I conceive, was occasioned by the new sensation conveyed to the brain by the rapid change from a defective and morbid feeling to one both natural and healthy.

bones of the internal ear ; neither should it ever be locally administered in those cases where there is a morbid condition of the auditory nerves, and too great an excitement of the brain. Galvanism should not be resorted to in the common mechanical impediments to hearing, as hardened wax or any extraneous substance lodged in the passage of the ear, which occasions an obstruction to the perception of sound rather than deafness, and come more immediately under the treatment of the general practitioner or the operating surgeon.

The cases of deafness in which I have employed the Galvanic influence with the best results, are those affections which arise from the disordered functions of the chylo-poetic organs and the glandular and nervous systems. In the primary and local disorders of the ear, the topical application of Galvanism has sometimes been beneficial ; but, in several instances, it has disappointed my expectations, because an

unperceived internal structural mischief has counteracted its influence as well as all the means of medical relief.

Deafness is a more common consequence of the hepatic derangement than is supposed. Topical and stimulating applications to the tympanum have often done irreparable mischief; because a local treatment of an affection, dependant on the general health, cannot be beneficial, but injurious. I have unhappily seen too many instances where deafness was rendered irremediable by the injudicious practice founded on the erroneous principle of regarding the privation of hearing as an isolated disease.

As Electricity and Galvanism have long had the reputation of being efficacious remedies in deafness, it has fallen to my lot to see numerous cases of this malady, in its worst forms, after the ordinary treatment has proved unavailing. The preceding remarks are deduced from my own observations and the reports of deaf

persons, who have bitterly lamented their increased deafness from local applications, which have been perseveringly employed, even against the evidence of their own senses, and patiently submitted to under positive assurances of perfect recovery.

As I intend to give several very interesting cases of recovery from deafness in the appendix, I shall now confine myself to a few striking facts, which may teach others to regard deafness, in general, as they do other losses of sensorial power, arising from constitutional malady, or acquired disease ; and which, in its incipient stage, is more generally remediable by proper medicines, than by any internal or external application to the organs of hearing. I have found the local administration of Electricity much more efficacious than that of Galvanism in the cure of deafness, in healthy persons, when it arose from the debility or relaxation of the tympanum, torpor of the auditory nerves, obstruction of the eustachian tube, etc. ; and the

milder forms of Electricity, properly directed to the parts affected, have proved more beneficial than the usual practice of administering shocks.\*

Having recorded several remarkable cures of deafness, effected by Electricity, in my treatise on that subject, I shall now notice the effects of Galvanism in that complaint.

In several instances the *local* application of Galvanism has been found very beneficial in improving the sense of hearing ; but in few cases has perfect recovery been

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\* The danger of administering violent Electrical applications to the ears, for the cure of deafness, must be reasonably inferred from the peculiar sensibility of the drum, and other internal parts of the ear ; and I know many bad effects have been produced by this injudicious practice. In some recent cases of this description the uniform mode in which Electricity has been indiscriminately administered to several persons, labouring under inflammatory and organic diseases, has occasioned the most serious results.

effected. The most remarkable instance of recovery was in a female, who was so perfectly deaf that she could not hear the loudest sound. Her deafness had been of long continuance, and was occasioned by an injury she received when a child. After the application of Electricity for several weeks to no purpose, I made a direct application of Galvanism to the ears for several days, when she heard the human voice, which she had not done for more than eighteen years. The patient subsequently made progressive improvement, and I dismissed her, when she could hear common conversation tolerably well.

In some cases I have advantageously employed Electricity and Galvanism conjointly or alternately. The former to the parts affected, and the latter to the system ; and, sometimes, when one of these agents has not been found as beneficial as I anticipated, the other has surpassed my expectations in those disorders of the internal ear, which cannot be ascertained by inspec-

tion or contact. Several deaf patients, who were sent to me by the first practitioners for the topical administration of Electricity and Galvanism, and who did not derive any benefit from them thus applied, were, some time after, cured by the internal exhibition of Galvanism, made with the sole view of restoring the hepatic action. Many persons who were deaf of the right ear only, and who had been so for several years, of which I was perfectly ignorant as they did not inform me of it, and as they heard my voice very well with the left ear, tried Galvanism in the most decided cases of liver disease, under which they had long suffered in defiance of the best advice and medical treatment; on their recovery from their hepatic ailment, they found, to their astonishment, that they could hear as well with the right as with the left ear. As I was not aware of any direct connection between the biliary organs and those of hearing, I naturally attributed their cure to the restoration of their general health. To several patients

who complained of torpid and obstructed liver, and whose biliary secretions were deficient, irregular, or vitiated, and whose deafness insidiously came on after the first attack of visceral disease, and gradually got worse as the internal malady advanced, Galvanism was administered to excite the action of the liver ; and I found, that, as the patients gradually recovered their biliary disorder, their hearing proportionably improved ; and they were eventually cured of their deafness without any local application whatever. In these cases the indications were characteristic of nervous deafness and obstruction of the eustachian tube. The pallid and flabby appearance of the external ear, the dryness of the auditory canal from the want of ceruminous secretion, and the enlarged tonsils of the throat, as well as the peculiar feelings of the patients, proved, that both the nervous and glandular systems were affected by the morbid condition of the stomach, liver, and bowels ; and the deafness, though of long continuance, was

not a structural but altogether a functional ailment, dependant on the digestive organs.

That such results should have been produced by Galvanic agency is not more remarkable than that blindness should be cured by stomachic remedies, or that melancholic or furious madness should be occasioned by torpid or diseased liver. A direct connection appears to exist between the stomach and the eyes, which is evident from their reciprocal and sympathetic action ; for intoxication obscures the sight, and the appearance of a disgusting object produces nausea. Though we cannot trace any immediate connection between the biliary organs and those of the ear, yet it must be admitted, that the brain is more or less affected by the diseases of the abdominal viscera ; particularly that of the liver. As the secretions of that viscus are absolutely necessary for nutritious and excrementitious purposes, and as its disordered functions generally affect some portion

of the brain, why not sometimes affect that part which communicates and sympathizes with the ceruminous glands, the tympanum, and auditory nerves, and thereby destroys or impairs sensorial power ? This result is as probable as that of inflammation or congestion of the brain, occasioned by inflammation or congestion of the liver; and that their reciprocal and sympathetic action should suspend or annul intellectual capability, Mercury, which immediately acts on the hepatic organs, in numerous instances, cures both blindness and deafness without any direct or powerful application to the eyes or ears, as is well known to the medical profession ; and that it is constantly employed by oculists and aurists for that purpose is too notorious to require proof. On the same principle, Galvanism, which is a more innocent remedy than mercury, is beneficial in deafness ; for it excites the sanative action of the glandular system, and the healthy functions of the brain ; it increases arterial action, the energy of the tympanum and auditory

nerves ; and, by these means, restores sensorial power to the organs of hearing. As one fact is of more value than many theories, the following statements must be not only interesting but useful.

A gentleman, aged forty, whose right ear was rendered deaf by the explosion of a bomb which was supposed to have relaxed or otherwise injured the tympanum, tried the local application of Galvanism to the ear, for two weeks, without any benefit. As the patient was labouring under torpid liver, occasioned by a long residence in a hot climate, Galvanism was then directed to excite that organ, which it effected in a few days ; and, very soon after, the hearing of the right ear, which had been lost for four years, was fully regained.

A young lady, who had been deaf of both ears for more than three years, and had, under the direction of several aurists, tried various internal and external applica-

tions in vain, applied to me for the cure of her complaint, which was pronounced to be nervous deafness. Galvanism was administered about five weeks to the spine and the abdominal viscera to restore the tone of her nervous system ; and she regained not only corporeal strength, which had been considerably reduced, but sensorial power. After the lapse of seven years, I am authorised to state, that her hearing has continued perfectly good.

A middle-aged gentleman became deaf of the right ear, and continued so for more than eight years ; he complained of noises in the head, dryness of the ear from a defective secretion of wax, and other symptoms characteristic of nervous deafness. As he laboured at the same time under an obstructed liver, inducing a jaundiced appearance, Galvanism was daily administered for three weeks, which not only removed the hepatic disease, but fully restored his hearing without any local application.

A gentleman, about thirty years old, had gradually become exceedingly deaf of both ears, and continued so for more than fourteen years. The privation of his sensorial power he attributed to a *coup de soleil*, though his relatives had perceived that his power of hearing had been diminished for some months before. This patient was recommended to me by an eminent surgeon, who directed the topical application of Galvanism to his ears. This course was perseveringly and daily tried for seven months without any decided benefit. During this time, and for many years before, the patient suffered much from costiveness and a great depression of animal spirits, and would not have recourse to any medical treatment for the restoration of his health. Finding my efforts unavailing he went abroad for nine months, and, on his return to town, called on me to say, he had obtained very little benefit from change of scene or air, and that his deafness continued undiminished. Being fully persuaded, that the deafness, in this case, though decidedly

stated by several aurists to be nervous, was connected with the hepatic and other organs of the abdominal viscera, I proposed to him my friendly services in a trial of Galvanism to the digestive organs, in order that I might ascertain this point. To this proposition he consented, and the result justified my suspicion ; for, after a fortnight's course of Galvanism, his bowels spontaneously performed their functions, and his general health was so much improved, that he declared, he derived greater benefit from this mode of treatment than from all the means he had before adopted. His hearing became considerably improved, and would probably have been entirely regained, had he continued to pursue this curative process ; which, to our mutual regret, he was unable to do, being compelled by distressing family affairs to return to a distant country ; since which I have not heard from him.

An old gentleman, far advanced beyond the ordinary limits of human life, who had gradually become extremely deaf, and could not possibly hear without his trumpet and loud speaking for some years, tried the local application of Galvanism for two weeks without any advantage. As the patient had long been subject to indigestion and biliary derangement, which very materially affected the hearing of one of his ears, he tried the internal administration of Galvanism for about a fortnight, which restored his digestive power and improved his hearing so much, that with the aid of his trumpet he could distinctly hear common conversation and pulpit discourses with the greatest facility. He then discontinued his attendances on me, as I gave him no encouragement to expect any greater benefit ; for the infirmities of old age cannot, of course, be cured by Galvanism or by any other means. I saw this gentleman about a year afterwards, when he informed me, that, though he had occasionally been subject to indigestion, his

improved power of hearing continued undiminished.

In these cases the loss of sensorial power was characterized by the vague and indefinite term of nervous deafness. The following is a case of deafness from paralysis of the auditory nerve and obstruction of the eustachian tube.

A young lady had been deaf of both ears for several years. Her deafness was preceded by the loss of general health and a violent sore throat, which occasioned a considerable enlargement of the glands. She complained of great derangement of her digestive organs, painful affections of the head, great noise in the ears, fulness and constriction of the throat, and extreme difficulty in distinguishing the sound of the voice from the noises in her head. The local employment of Galvanism, recommended by her medical adviser for some time, was of no use; but the internal administration of Galvanism not only

effected the restoration of her general health in a few weeks, but in a great measure removed the combined causes of her deafness, from which she so far recovered as to have useful though not perfect hearing.

A middle-aged gentleman, who had been deaf of the right ear for some years, applied to me for the cure of torpidity of the liver, induced by over-exhibition of mercury for syphilis. Galvanism was employed with the view of rousing the action of the biliary organs, which it fully accomplished in a month, when the patient informed me, that he had regained the hearing of the affected ear; the loss of which I was not aware of as he heard exceedingly well with the other ear.

A scrofulous patient, who had for several years been subject to glandular swellings of the neck and throat, which occasioned an obstruction of the eustachian tube, was, after a five weeks course of Gal-

vanism internally exhibited, perfectly restored to his former hearing.

I could give numerous instances to prove the efficacy of Galvanism, applied to the system, in the recovery of patients who had long been deprived of their hearing, not only from affections of the tympanum and auditory nerves, from the closure of the eustachian tube, from scarlet fever, from measles, etc., but also from the simple puriform discharge from the tympanum, not complicated with funguses or polypi, nor arising from a carious state of the bones of the tympanum. As the organs of the ears in these cases were not structurally disordered, the deafness was remediable on the general principle of restoring the natural secretions ; particularly of the glands of the ear. This complaint cannot always be considered a local disease, independent of the constitution ; because topical applications have frequently proved ineffectual, and general remedies have afterwards succeeded. Be that as it may,

I must state as the result of my experience, that I have had several proofs of the utility of Galvanism as a constitutional remedy, not only in abating and curing the purulent discharge, but also in restoring the sense of hearing, in different degrees, according to the extent of the injury done to the drum of the ear.

A young gentleman, who had a purulent discharge from both ears, and was deaf to the greatest degree, obtained immediate relief by a puncturation of the tympanum. This soon after healed, and he became as deaf as before the operation. There was evidently a closure of the eustachian tube as well as a foetid discharge, which clogged up the auditory canal, injured the tympanum, and so much affected the auditory nerve, as to indicate a superadded nervous deafness. In this case, the local administration of Galvanism, applied at the request of an eminent surgeon, aggravated the malady ; and its constitutional use for a few weeks, by checking the discharge of

one of the ears, and by diminishing that of the other, improved the hearing of both. The extent of the benefit was limited, because, as I believe, the tympanum had been thickened and rendered opaque by the puriform matter, and its susceptibility farther impaired by a structural change.

A boy about twelve years of age, who had been deaf for some years, had a purulent discharge from both ears, and his general health was impaired from an inactivity of the liver and the bowels. Galvanism was constitutionally employed, with the view of removing the disease of the abdominal viscera, which it perfectly effected in a few weeks, and the morbid discharges from both ears were greatly diminished ; and, although not perfectly cured, he regained his former hearing.

I have at this time a young lady under my care, who has suffered extremely from ill health for many years. Her digestive organs were exceedingly deranged ; her

nervous system easily agitated by the slightest emotion of the mind ; her hearing was seriously impaired, and both her ears emitted a purulent discharge that was particularly offensive. I have treated this case as a constitutional disease, and have employed Galvanism to the stomach and liver without making or directing any application whatever to the ears. The patient has, after six weeks, nearly regained her digestive powers, and her nervous and corporeal energy; the morbid secretions have almost subsided ; healthy cerumen or wax has been formed ; and her hearing is so far regained that she can distinctly hear me speak in a low tone of voice, and can understand common conversation without any difficulty.

I conclude this subject by noticing two cases of recent occurrence, as an illustration of my remark, that when deafness arises from relaxation of the tympanum, defective energy of the auditory nerves, or obstruction of the eustachian tube, and is

*not dependant on, nor perpetuated by* a disordered state of the system, the *local* application of *Electricity* has been found in my practice a more beneficial stimulus than, the *local* application of *Galvanism*. This fact can only be accounted for on the principle of the great dissimilarity which exists between Electricity and Galvanism, and on the peculiarities of diseased action in the human frame.

A healthy young woman became gradually deaf of both ears, six years ago, and her deafness increased to that degree that she was obliged to relinquish her situation as lady's maid. Various internal and external remedies had been perseveringly tried to no purpose. Her deafness, which was decidedly nervous, was aggravated by stimulants put into the ear ; but Electricity, administered to her in the mildest form for six weeks, restored the sense of hearing to both ears. After the lapse of two years, I was informed by her not long

ago, that she fully retained the benefit she had acquired from Electricity.

A gentleman, who had been exceedingly ill for some months, and had for many years suffered from stomach disease, who had become deaf of the right ear two years ago (the left ear having been organically injured, and the sense of hearing totally lost for ten years), was sent to me by his medical adviser. The deafness in this case was occasioned by a partial closure of the eustachian tube. As the patient was restored to health by the judicious treatment previously employed, I made but three applications of Electricity to remove the obstruction which mechanically impeded the progress of sound, and he experienced a sudden, perfect and permanent recovery about two years ago.\*

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\* As soon as my professional duties will allow, I shall publish a short treatise on deafness.

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## INFERENCES.

From the preceding remarks on the science and practice of Galvanism it must be inferred ;—firstly, that the prejudice against its medical use is founded on an ignorance of its chymical properties and sanative powers. The period is, however, fast approaching when the obscurities attending this novel science will be dispelled, and the united clamour of prejudice and selfishness will be subdued, as effectually as in the case of vaccination, which had to contend with a host of opposers ; who would have deprived mankind of its surest defence against the ravages of a destructive disease.

Secondly, that the efficacy of Galvanism in the most obstinate cases of chronic disease, which the ordinary remedies cannot cure, is a matter of vast importance to the community, for the majority in every class of society are, more or less, afflicted with

those disorders, which, though slow in their progress, are nevertheless fatal in their results. Whether these maladies, so generally prevalent, be referred to the derangement of the digestive organs, or to that of the nervous or sanguiferous system, is a matter of little consequence to the invalid, provided he can obtain a remedy capable of safely and successfully contending with the disease at its source, and which can restore the blessings of health.

I have not made any particular theory the rule of my practice, nor have I taken up the opinion that all chronic disease are occasioned and perpetuated by a disordered state of the abdominal viscera, and that every class of the same malady is to be solely referred to the stomach, the liver, or to any one organ of vitality ; for I too well know the intimate connection, dependance and sympathy, which exist between them all, to imagine the absurdity of an isolated disease : neither do I think that individual cases should be always treated on general

principles, or without a due regard to the peculiarities of the malady, the age, the sex, the constitution, and the long established habits of patients. In such random practice, a bow may be successfully shot at a venture, but the odds are fearfully against the recovery of the patient. The conclusions to which I have arrived, and which I have faithfully stated in the preceding pages, are the results of my own observations, uninfluenced by a predilection for any preconceived hypothesis on the nature and treatment of diseases; and, although I may be supposed by some of the medical profession to be wrong in my theory, yet experience has fully shewn that I have been right in my practice. I have found Galvanism more efficacious in chronic disorders than mercurial purgatives, stomachics, tonics and nervines, and which I assert, after a more extensive trial of its agency than has ever been made by any practitioner in this or any other country; a fact which I am bound to announce on the responsibility of my professional and moral

reputation. In all cases of a slight and trivial nature the beneficial effects of Galvanism are immediately perceptible ; but its greatest honour is derived from the cure of those chronic diseases which are beyond the reach of medicine, and which it has not, in my practice, failed to effect, whenever the constitutional vigour was not so far reduced as to preclude the hope of recovery. For this reason I have been enabled to enlarge my practice without invading the province of the general practitioner, and have extended the benefits of Galvanism to those unhappy sufferers, whose disorders cannot be cured by the ordinary treatment. Galvanism has often produced the best results in the worst cases, and has afforded equal benefit to the sinking energies of old age, to an unnatural feebleness of youth, and to a premature senility of middle life. That both Electricity and Galvanism have been considered by the professors of the healing art as more powerful and more beneficial agents than the ordinary medical means

may be justly inferred, because they have been generally recommended by them as the *dernier resort* in the most hopeless cases, and after every other means have proved abortive. Is it not reasonable to conclude, that such recommendation must be founded on the belief of their superior efficacy? If not, on what ground can such recommendation be justified?

Thirdly, that Galvanism generally effects a permanent recovery is a fact of as much importance to the invalid as its efficacy in chronic disorders is to society at large. That this should be the case is not at all surprising, when we consider the nature of that philosophical agent, which differs so materially from drugs and chymicals. The Galvanic fluid is not a compound but a simple principle, incapable of analysis; it is developed by a peculiar chymical process, is perfectly free from all gross material atoms, and is totally unconnected with homogeneous or heterogeneous particles; it acts immediately on the nervous system,

and exclusively on the parts which are subjected to its influence, without the aid of the digestive organs or the lymphatic system. This is not the case with medicines, which must pass through the digestive process and be taken up by the lacteals. This reasoning, *a priori*, is fully borne out by the results obtained from the Galvanic process ; for, during my practice in town for nearly nine years, not one patient in thirty, on a fair calculation, has found it necessary to take a second course of Galvanism. That permanent recovery has not, in some cases, been accomplished I will readily admit ; but I most positively maintain, that the cause of failure was not to be attributed to the inefficiency of Galvanism, but to some injudicious and unfair applications which have been made of that powerful remedy : for instance, many patients have been sent to me by their medical attendants for the *topical* application of Galvanism, in order to remove some symptomatic and local affections, although the primary disease was not only

not subdued but in full operation, as evinced by a remote disturbance of the system. Can it be reasonably supposed that Galvanism, or any other means, directed to the concomitant effects of a general disease can afford any greater benefit than the mere palliation of painful symptoms ? Or can topical applications be expected to cure constitutional disorders ? Certainly not.

In many cases where Galvanism has been judiciously prescribed and properly administered, and when the patients had obtained partial benefit from its use, they were desired, after a few trials, to discontinue it, and the ordinary medical means were again resorted to. Thus when a cure, in its origin derived from the Galvanic process, has subsequently been effected, the credit of the recovery was exclusively given to the medical treatment ; and in those cases where a recovery did not result, the failure was unfairly and exclusively ascribed to Galvanism !

Many patients, who came to me without the intervention of their medical attendants, have, from a mistaken notion of the powers of Galvanism, and a too sanguine expectation of obtaining rapid recovery from diseases of long continuance, relinquished its use after a short trial, which afforded them proportionate benefit, and thus discarded perhaps the only remedy capable of restoring them to health, because they did not immediately obtain perfect recovery. The absurdity of such conduct must be evident ; especially when compared with the patience with which many of them had endured the daily exhibition of medicines for months, and some for years together. It appeared, because Galvanism is not an ordinary remedy, these patients expected that it would perform miracles, and cure the most obstinate chronic disorders of ten, twenty, or thirty years standing, in as many days, although those disorders had baffled the skill of the first practitioners of the age. There is another class of patients who could never do justice

to themselves nor to the reputation of any practitioner; I mean those unfortunate persons, who are under the dominion of long established and injurious habits, and who, regardless of the dictates of prudence and experience, neglect to assist a curative process by a proper attention to medical and moral advice. Some patients have, from parsimony, discontinued the use of Galvanism after deriving partial benefit, and have thus prevented a permanent cure; while others, unfortunately not only bankrupts in health but also in fortune, have not been able to afford a sufficient course, and from motives of delicacy, honourable to their feelings but injurious to my practice, have discontinued its use without any assigned reason. The case of these unfortunate sufferers merited every consideration; and I lament that those, who most needed health and deeply felt its value from its loss, should, from a want of candour on their part, have defeated their own object, and disappointed my hopes. Thus has the beneficial influence

of Galvanism been opposed by erroneous judgment, indiction of character, instability of purpose, impatient temper, obstinate adherence to pernicious habits and self-neglect, abject meanness, and exhausted resources, which have too often prevented the permanent advantages that would have been derived from a proper and reasonable duration of the Galvanic course.

Fourthly, that, though Galvanism is a powerful, efficient, and permanent remedy, the occasional use of gentle medicines and a well regulated diet are useful auxiliaries in aiding its beneficial effects. This will appear reasonable, as Galvanism is not a pill or a potion, but a philosophical agent; and as the same assistance is requisite in the administration of mercury, the nitromuriatic acid-bath, and other potent remedies, it cannot derogate from the merits of Galvanism that some simple medicines should be occasionally used to promote a more rapid recovery. The medicines, which have generally been taken during

a Galvanic course, are moderate doses of aperients combined with absorbents and alkalines, so mild in their nature and safe in their operation, that they have been administered to infants at the breast without any inconvenience. That medicines should be at all necessary or occasionally taken depends on the nature of the complaint, and the previous and present state of the patient. For instance, in the case of habitual and actual constipation, arising from torpidity of liver and paucity of bile, producing a congestion of the bowels, it cannot be supposed that Galvanism should instantaneously excite the liver so as to secrete a quantity of bile, sufficient to remove the faecal accumulation, without the aid of a purgative. On the other hand, in the case of constipation arising from an obstruction of bile in the gall ducts, created by spasm or gall stones, the application of Galvanism to the seat of the disease will almost immediately remove the evil, and produce so copious an operation of the bowels as fully to unload

the intestinal canal without the aid of any purgative. In the exhibition of medicine I have made it the rule of my practice to recommend to those patients who are exclusively under my care, and not sent to me by medical gentlemen (for whom I only act ministerially), those medicines which they have found from experience to be most congenial to their constitutional temperament, and which most beneficially co-operate with the Galvanic influence. As beneficial auxiliaries very materially assist recovery, I consider it my duty to regulate the diet and exercise of my patients, recommending what is most conducive to the permanent restoration of their health, and constantly bearing in mind that no particular regimen can be judiciously prescribed on general principles : because individual cases are attended with various peculiarities. I have, however, found from experience, that a generous diet more fully co-operates with the Galvanic influence than stinted meals and a diminished beverage. I have often seen

the bad effects of a rigid adherence to the written or oral rules of a spare diet, and to a too scrupulous attention to stated times for satisfying the cravings of hunger and thirst. From frequent observations and reflection on the dietetic treatment of chronic diseases, I am led to believe, that the dictates of nature are often more unerring guides than the arbitrary rules of certain theorists, who invariably enforce the exclusive use of an animal or vegetable diet; and I am persuaded, if a proper attention were paid to the qualities of our food and beverage, and to their culinary or chymical preparation, we should be saved from a variety of sufferings arising from indigestion; and the digestive organs would not be so frequently complained of, as they now are in consequence of the bad quality of food and the deleterious mixture of fluids.

As I shall briefly notice Electricity, the Nitro-muriatic Acid-bath, the Air-pump Vapour-bath, the General and Local va-

pour-baths, the Portable Sudatory or warm air-baths, etc., in the appendix, as auxiliary means which I employ in my practice, I shall now only remark that salubrious air, proper clothing, active and passive exercise, and regular habits, which best promote health and longevity, are as essentially necessary to be enforced by a medical practitioner as a course of medical or dietetic treatment.

Fifthly, that Galvanism is not only an efficient but a perfectly safe remedy, in the hands of a skilful operator, is a fact that should inspire the confidence of fearful patients, and encourage them to resort to its aid. The safety and mildness of this philosophical agent result from its nature, its *modus operandi*, its *modus applicandi*, its peculiar operation on the human frame, and from the nature of the diseases to which it should be administered.

Galvanism, as well as Electricity, is a simple and subtile fluid, and, in its essence, is

an innoxious principle ; and its power entirely results from its quantity or intensity. Its chymical properties are well known ; and its remedial powers are now happily beyond dispute ; and its applicability to certain diseases, in their various stages, have been plainly stated in this treatise for the government of all practitioners ; especially in reference to its peculiar action, as an efficient and beneficial substitute for mercury, in chronic diseases of the liver. I can venture to give the following reason to account for its decided superiority to that powerful mineral, which, even when most judiciously exhibited, has, in many cases, done irreparable mischief to peculiar constitutions. I am led from my researches into the *modus operandi* of animal, vegetable and mineral remedies, taken into the stomach, to refer to certain laws of nature, which occasion their decomposition and the absorption of their medicinal virtues, while the *caput mortuum*, or the insoluble and grosser particles, are voided through the intestinal

canal. That mercury itself acts on a Galvanic principle, and under the laws of Galvanic agency, may appear reasonable from the following considerations. Calomel, or any other preparation of quicksilver, when received into the stomach, must be decomposed in order to develop oxygen and diffuse its medicinal energy. By what power is the decomposition effected ? Is it the heat of the stomach ? I conceive not : nor do I believe that the vermical or mechanical action of that organ effects a decomposition of mercurial oxydes any more than an amalgamation of quicksilver, which it is well known it cannot do. I think that this question can easily be solved by that law of Galvanism which requires the agency of two dissimilar fluids and an interposed metallic substance, in order to the development of the Galvanic influence ; apply this principle to the decomposition of mercurial remedies taken into the stomach. The salivary fluid and the gastric juice are the two dissimilar fluids which act on the semi-metallic

substance, decompose it and develop a species of Galvanic influence, which has the strongest affinity to oxygen. This process may be made apparent to the senses in the excitation of Galvanism by the common troughs. Though the saliva is colourless and almost tasteless, yet it contains a certain portion of the muriate of soda; its specific gravity is greater than water, and its consistence is plastic and spumous from the entangled atmospheric air; it possesses a power beyond any other fluid, viz., the trituration of quicksilver; and, probably, the gastric juice has a still more powerful effect in the decomposition of metallic substances, and in the development of the mercurial influence.

Very few persons are aware of the reason for the well-known and general practice of giving a purgative after a mercurial pill, except under the vague idea of counter-acting the bad effects of the mercury. The reason is this; the mercurial oxyd remains in the *prima via*, and the irrita-

tion, which its heterogeneous and angular particles produce on the nerves of the intestinal canal, necessarily and morbidly excites those of the system, and elicits a greater secretion from the glands of the bowels to defend the mucous membrane from that inordinate irritation, which has often produced active inflammation and ulcerations of the intestines ; especially in hot climates where mercury is given to excess. The superior advantage of the exhibition of Galvanism to the exhibition of mercury arises from the fact, that the decomposition of the metallic substances does not take place in the stomach, but in the batteries ; and the oxygen and hydrogen are developed by the positive and negative poles, and conveyed into the system, and extracted from it, by humid conductors without subjecting the intestinal canal to the irritation of the mercurial or metallic oxyd, which it would be necessary to expel by the weakening operation of a purgative medicine, whose effect must also be counteracted by strengthening medicine to sup-

port the constitutional strength during a mercurial course.

Thus Galvanism affords to the invalid advantages superior to all the benefits of mercurial remedies without any baneful effects on the glandular, sanguiferous, nervous, or muscular systems.

The difference in the actions of Galvanism and mercury upon the system is great, important and remarkable; and gives to the former an immense superiority. Galvanism, skilfully administered, seldom requires the aid of any secondary agent to supply its deficiency, and never to remove injurious effects; it is not at variance with any constitutional temperament, nor can it superinduce any disease: in its application it is perfectly safe, pleasant, direct, and often instantaneously effective; it gives the patient no personal inconvenience whatever; and may be exhibited at all times to both males and females, of all ages, and at all seasons of the year. Mercury, on the

other hand, requires particular attention to all these circumstances ; its secondary or auxiliary agents are purgatives and tonics to expel its *residuum* and rebrace the debilitated system ; it is frequently so much at variance with constitutional temperaments, that it is sometimes totally inoperative, and never cures a disease but by the introduction of another. Its application is never so safe but it requires protection from colds; it is unpleasant and personally inconvenient, because it affects the gums, the teeth and the breath ; it is indirect, because it must be carried by the absorbents to the seat of disease ; and, whenever it is instantaneously operative, it is sure to be injurious ; and lastly, it cannot be applied at all times and seasons with such safety as Galvanism, particularly to the female sex.

Galvanism possesses superior energy to the nitro-muriatic acid-bath and sponging must also be admitted ; because that remedy itself borrows its efficacy from

a Galvanic principle, and produces a general action in the system, in order to rouse into action a torpid gland, or remove some local obstruction. My late worthy and highly-esteemed patient and professional friend, Dr. Scott, formerly of Bombay, and lately of Russell Square, who discovered and introduced the use of the nitro-muriatic acid-bath, and, by his successful practice, established its reputation as a milder and superior remedy in bilious disorders than mercury, has, with the candour of his frank and generous disposition, recorded his opinions on the subject in a paper which he presented to the Medico-Chirurgical Society, and which was published in their transactions of the year 1817. That scientific gentleman resolved the action of chlorine and the combined acid to a Galvanic principle. During the time he was under a Galvanic course, he not only expressed his conviction of the superior efficacy of Galvanism to those agents, but from time to time brought me several of his patients in whose cases his remedies

had failed ; and he had the satisfaction to witness the successful results of his liberal and disinterested recommendation of my practice, which was opposed to his own. His truly noble and generous mind was above the thought of a groveling and selfish interest. His death is not only a very great loss to me, but to society at large ; and I cannot resist the gratification of recording, in these humble pages, the high esteem I entertained for his professional and private character, and shall ever cherish for his memory. I beg the reader to pardon this digression.

The Galvanic influence can be made to act immediately on any particular organ, or parts of the body, without producing a correspondent excitement of the system—an advantage not obtained by chlorine or the acid-bath, because those remedies must act on the stomach or the absorbents. This distinctive superiority of Galvanism is most important in the equalization of the circulation, in those organs of vitality,

which are inert in their action and occasion a general disturbance of the system. For instance, if there exist a morbid excitement of the head and a determination of blood to the upper extremity, from torpidity of the liver and inactivity of the bowels, Galvanism can be immediately directed to the offending organs, by making them the circuit of communication through which its influence must necessarily pass, and thereby stimulate them to action and equalize circulation, animal heat, and nervous power. Is not this a grand object to be gained by the employment of Galvanism? I might give many other instances, where it is a matter of the first consequence to apply this remedy to certain nerves and muscles, without exciting a system already too much irritated. For these reasons Galvanism has a decided superiority, as a local as well as a constitutional remedy, to either mercury, the chlorine, or the nitro-muriatic acid, sponging, or baths.

The safety of Galvanism may be also clearly inferred from the *modus applicandi*, and is evinced by a proper administration of its influence. The application of Galvanism is at its commencement rendered imperceptible, its strength is gradually increased, and the quantum of power necessary to produce beneficial effects is determined by the susceptibility of the patient. Thus, while the remedy is exhibited, however mildly or otherwise, it is not for a moment free from the controul of the operator, who feels his way, as it were, by a careful and gentle application before he operates more powerfully ; and by this mode he is enabled to ascertain most accurately the constitutional state and power of the patient before the remedy is fully exhibited : so that a judicious, skilful, and experienced practitioner can never do the slightest injury, even in cases where he may fail to do any good. With powerful medicines an experiment can very seldom be made on the sick without a beneficial

or injurious result; and as soon as the physic is taken into the stomach it must be allowed to take its course, although the earliest effect it produces may denote its inefficacy. In those innumerable cases where the expected benefit does not ensue, but a mischievous effect follows its exhibition, what art can place the constitution of the patient in *statu quo?* This objection, which has been frequently made to the trial of new and powerful medicines, cannot apply to Galvanism properly administered. The Galvanic influence is of immense value, not only as the test of vitality, but also as a gage of the constitutional temperament, a criterion of the nature and quantum of disease, and a barometrical index to denote the state of a patient and the progress of his recovery. This is daily made evident to my patients. For instance, in a sanguine temperament a less Galvanic power is required to produce the same degree of excitement as in a leucophlegmatic temperament. In deep seated and occult diseases, where the morbid

actions may assume an organic form, the skill of an experienced and observant practitioner will, by this test, as clearly discover the seat and quantum of disease as can be done by Lanec's stethoscope. The inflammatory or excitable state and the torpidity or chronic inflammation of certain organs, as well as their convalescence, and the condition of the general system, are clearly and progressively to be ascertained by the increased or diminished degree of Galvanic power the susceptibility of the patients can bear ; ascertained by the number of plates employed in the curative process. Sometimes at the commencement of a Galvanic course a patient of a sanguine temperament, labouring under a high degree of chronic inflammation, cannot bear a greater power than that which is developed by three or four pairs of plates, and at the end of the course, when recovery is nearly accomplished and the morbid susceptibility is fully subdued, he can comfortably bear the power of twenty or thirty pairs of plates. And *visa versa*, in patients suffer-

ing under extreme torpidity of liver, inactivity of bowels, debility of stomach, loss of spirits, and prostration of strength : in these cases I have sometimes employed the full force of four batteries, consisting of two hundred and eighty pairs of plates, without producing an adequate excitement ; but at the end of the course, when the general health was fully regained, the same person could not bear the power of more than ten pairs of plates. Another great use of Galvanism is, the certainty with which the course of the deep seated nerves can be traced and ascertained, by which means local applications may be made to the affected parts with greater certainty of success than by any external or topical remedies in common use. In a surgical point of view, Galvanism may frequently save the afflicted sufferer from a fearful operation, or painful applications of potent remedies. These remarks, which prove the superiority of Galvanism in chronic diseases, are not intended to apply to the judicious exhibition of mercurials in acute diseases ;

for I am fully persuaded, that the various preparations of quicksilver, as well as that of opium and other powerful medicines, are, as well as venesection or local bleeding, particularly beneficial ; and, in many cases, form the only ground for hope. I claim no greater merit for Galvanic agency than it really deserves, and ascribe to its sanative and curative powers those benefits, only, which it has accomplished in my practice ; but I have to lament several instances where patients themselves, from their own judgment or under the direction of medical men, who were unacquainted with the powers of Galvanism and its proper administration, have employed that agent not only without any good effect, but with mischievous results. Thus the reputation of an useful remedy has, occasionally, been brought into doubt and disrepute by a daring and improper management of the Galvanic battery. Hence it may reasonably be concluded, that the use of Galvanism requires as much science and skill, judgment and experience, as the use of mercury or

any other powerful remedy ; and that no sensible or prudent man will employ either the one or the other to himself without having proper advice. The wisdom of the sick is evinced by placing themselves under the care of their medical attendants, and by trusting to the judgment of those who are competent to apply or advise such remedies as will produce the best results.

Sixthly, that the fear of resorting to Galvanism, as a medical means, is altogether groundless, if that agent be properly administered. From the preceding remarks and inferences the reader must have observed, that the form and mode in which I employ Galvanism are very different from the manner it was formerly or is now commonly applied. Scarifying and blistering the parts, through which the Galvanic current was made to pass, and the employment of shocks are now found to be unnecessary. The useless and senseless experiments which were recently made on the dead bodies of criminals,

and which produced frightful distortions of countenance and violent agitations of the muscles, as reported in the journals of the day, answered no other purpose than to leave an unfavourable impression on timid minds relative to the powerful effects of Galvanism on the human frame. The mischievous notion that this remedy must necessarily occasion similar convulsive agitations in living as in dead subjects I most positively deny ; and the fearful patient may rest assured, that no sudden or painful feelings are to be endured in the medical application of Galvanism : but that, in numerous instances, the most delicate females and young children have experienced from its administration such sensations as were most pleasant and congenial to the state of their system

Seventhly, that Galvanism should not be indiscriminately used it is of the first importance to ascertain its applicability to certain cases, and the propriety of its constitutional or topical application. This is

my first consideration ; and I minutely attend to that variety of circumstances, which characterizes the peculiarities of individual cases. Not only an adequate knowledge of the nature and stages of chronic disease, but a practical acquaintance with the powers of Galvanism is absolutely necessary to form a correct conclusion on the subject. It must be allowed, that there is a tact in the different branches of medical practice, which is acquired by constant and skilful attention to particular subjects, long experience, and close observation on the general results of any peculiar mode of treatment. On this principle, therefore, it may be inferred, without arrogating to myself any superior skill, that I must be, at least, as competent to judge of the beneficial applicability of Galvanism in the various stages of chronic disorder as any practitioner, who has neither made the science of medical Galvanism his particular study, nor employed it daily in his ordinary practice. Several physicians, surgeons, and apothecaries, as well as oculists and

aurists of the first eminence in their respective professions, have, at different times, done me the honour not only to consult me as to the use of Galvanism in behalf of their patients, but also on their own individual cases ; and many of those gentlemen have placed themselves entirely under my medical care while they pursued the Galvanic course, from which they obtained recovery. This is a well known fact, no less indicative of their liberality of sentiment than it is flattering to my feelings. I must, however, observe that many practitioners, who were unacquainted with the curative powers of Galvanism and my mode of applying it, have given a decided opinion against its use ; and patients, who were told by their medical advisers that Galvanism was inapplicable, dangerous or useless in their cases, have, notwithstanding such declaration, made trial of its efficacy, and have found to their satisfaction the recovery which they could not obtain from medical treatment : the consequence has been, that those patients

lost all confidence in the judgment of their medical attendants, and were subsequently led to introduce into their families, and among their connections, other practitioners of more scientific attainments and more liberal views. It is, therefore, no proof of wisdom or of sound professional policy in practitioners to pronounce, without inquiry or investigation, on the applicability, safety or utility of any remedy with which they have no practical knowledge. As the successful treatment of chronic diseases is a matter of the greatest importance to the well-being of society, (the majority of the community suffering from its prevalence), and as the medical profession may be considered as guardians of the public health, it may be justly said, if the knowledge of the best remedies be a duty, an opposition to their use, through prejudice or ignorance, is a crime of no small magnitude. I have also met with some instances, as reported to me by my patients and by professional and private friends, of a singular hostility evinced by

those who were well acquainted with the remedial powers of Galvanism, and who had personally witnessed its beneficial effects under my administration ; but, from some motives, have insidiously opposed its employment, under a plausible and more than ordinary interest for the welfare of their patients. Little were those men aware that the secret springs of their conduct were both suspected and discovered by the acuteness of common sense. Their opposition was frustrated by the previous determination of their discontented patients, who subsequently resorted to Galvanism with the greatest advantage : and the result has been that they have spoken with perfect contempt of those medical advisers, who would have defeated the greatest object of their desire, — their restoration to health. An invincible error of the mind, honestly cherished, ought not to excite any feelings but those of pity ; for I can lament a mistaken judgment and a conscientious opposition to my practice, and yet respect the individual ; but a covert and base hostility,

however disguised, against the use of any beneficial remedy, when instigated by envy and maintained by avarice, renders a man a public enemy ;—by opposing and retarding a public good he commits a public wrong, and therefore justly deserves a public exposure.

In noticing the improper conduct of a few mistaken or dishonourable men, I beg to be distinctly understood as not detracting from the general merits of the three branches of the profession ; for I am convinced, by long observation and an extensive professional and friendly intercourse with medical men, that from their education, habits and respectability, they possess as great integrity, practical virtue, and genuine humanity, as the members of any other public body whatever ; and I have experienced from the most eminent of them, the greatest liberality of conduct. The gratitude of society at large is due to them, more particularly for their professional and gratuitous aid to the sick and afflicted poor,

administered in private advice and at dispensaries. Should such labours of mercy cease, what a fund of charity would fail ! I am also happy to sincerely acknowledge my great obligations to many of those gentlemen for the recommendation of their patients, and for the support they have liberally afforded to my practice ; indeed the public are even more indebted to them than I am ; for, had they not sent to me some of the worst cases of combined disease, the suffering individuals would never have resorted to my remedies, against which they entertained a strong prejudice ; and I should not have had the opportunity of making such extensive and beneficial trials of Galvanism, nor have discovered its efficacy in many new and difficult cases in which it had not before been applied. I claim no extraordinary merit for my instrumentality, and wish that the meed of praise should be given to those to whom it is justly due ; for those persons are the greatest benefactors of mankind, who, encouraging and maturing an infant science,

sacrifice their individual interest to the advancement of the general good.

I have already said, that, for many years, I successfully employed both Electricity and Galvanism in different parts of the kingdom ; but it is only since my residence in town, during the last nine years, that I have applied Galvanism as a *constitutional* remedy to the diseases of the vital organs. This new system of treatment was suggested to me by the encouraging reports of foreign practitioners, to whom the merit of first employing Galvanism in asthma is due, by the subsequent trials made at the Worcester Infirmary in the same disorder by the presiding physician and apothecary, and by the report that Galvanism casually removed biliary obstructions and cured asthma. After mature reflection, I concluded that disordered respiration was frequently a secondary and not a primary disease, the consequence of some derangement of the digestive organs, and that recovery should have been ascribed to Galvanism, because

it cured the primary disease and not merely because it removed the concomitant affections, as dyspnoea, and other attendant symptoms. I was the more confirmed in this opinion by the positive assertion, "that cases of habitual asthma of twenty or thirty years continuance were as immediately relieved as cases of a recent date; and that a *post mortuum* examination of asthmatic subjects had proved that there was no organic disease of the lungs." From a conviction, that habitual asthma is generally a functional and secondary disorder, I determined to try Galvanism, not only in that complaint but in indigestion, obstruction and torpidity of the liver, and other derangements of the abdominal viscera. The result has justified my sanguine expectations.\*

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\* This philosophical agent, which was first brought into notice by the continental physicians, to whom the greatest merit is due, has subsequently obtained great reputation from the experiments of Monsieur Le Gallois, of Paris, made under the auspices of the Physical and Mathe-

Before I made a Galvanic application to others I determined to apply it to myself as soon as a proper opportunity offered. Though I was blest with a tolerable share of health, yet like other natives of British India, I have been occasionally subject to indigestion, biliary derangements, and a train of very oppressive symptoms. One evening, after great mental anxiety and corporeal exertion, I became

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matical Institute of France, and published in his work, entitled *Expériences sur le Principe de la Vie, notamment sur celui des Mouvements du Cœur, et sur le Siège de ce Principe*. These experiments were some time after repeated by the presiding physician of the Worcester Infirmary, with the view of ascertaining the laws of the vital functions; and the correctness of his deductions was for a long time disputed by the most scientific members of the faculty: but after a repetition of the experiments before these gentlemen, at the Royal Institution in the year 1821, all doubt of the extraordinary influence of Galvanism on the vital functions was removed, and the fullest conviction which the senses could obtain satisfied the most sceptical, and set the question for ever at rest. An account of these experiments was soon after reported in all the medical and philosophical

so severely affected with indigestion, nausea, giddiness and a violent headache, that I determined to make my first *constitutional* trial of Galvanism, which I cautiously did. My astonishment was as great as the relief I immediately obtained ; for in less than one hour my compliant was removed, when I became perfectly well,

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journals, and published in the transactions of the Royal Society of London. About that time, and at the request of a very scientific and literary physician, who is also one of the first chymists of the age, and that of several of his pupils, I made some Galvanic experiments on the heart and the lungs of a rabbit, and proved that a free respiration can exist after the division of the eighth pair of nerves. I also proved to ocular demonstration, as the body was open to view, that the digestive process in the stomach, and the peristaltic action of the bowels, could be long supported by the Galvanic current ; and that the intestinal canal could perform its final office, even when the last spark of vitality was apparently extinct. After such incontestible facts what opinion ought to be entertained of those who would either ridicule Galvanism, or argue against all evidence ? Let common sense suggest the answer, and self-conviction bring home the reply.

and felt greater vigour of body and mind than I had experienced for several months. A few subsequent applications of Galvanism so fully established my general health that, ever since, with only the occasional use of that agent, I have enjoyed more vigour of body and mind than at any previous period of my life. In consequence of this irresistible proof of the efficacy of Galvanism, constitutionally administered to myself, I was led to apply it confidently to others in similar cases, and then by degrees to other cases with various shades of difference ; and thus, from step to step, to most of the different maladies comprehended under the generic term of chronic diseases.

Although I determined, at the commencement of my professional practice in the metropolis, to confine myself to my department of medico-philosophical surgery, I was compelled from the necessity of cases, contrary to my wish, to recommend to my patients the occasional use of medicines

and a dietetic regulation, in order fully to secure to them the beneficial use of Galvanism and to promote their more rapid recovery. This I have often done to those invalids who were neither attended by a medical practitioner nor recommended to me by any medical adviser, but who had, originally and of their own accord, placed themselves entirely under my care. In doing what I considered to be my duty, and *from which I derived no additional pecuniary advantage*, I have unintentionally given offence to some physicians, who have withdrawn from me their liberal recommendations, and ceased to support my practice; while others have carried their professional hostility so far as never to prescribe Galvanism in any case to any patient, and, by other unfair means, have opposed my professional success. Although I lamented the displeasure of those gentlemen, to whose assistance I was indebted at the commencement of my labours, and whose subsequent opposition to my practice was for a time injurious to my in-

terests, yet I could not honestly compromise the welfare of those individuals who reposed implicit confidence in my judgment, and thereby sacrifice their health to a mere matter of professional etiquette ; more especially as I am thoroughly convinced, that a theoretical and practical knowledge of Galvanism and medical science should be combined in the same individual, in order to secure the utmost beneficial use of that philosophical remedy ; and that the *mere operators* of Galvanism, or of any other similar agent, must be incompetent to treat either medical or surgical cases with justice to the patients or credit to themselves. It has, indeed, been a matter of deep and frequent regret to many intelligent persons, that both Electricity and Galvanism have been abandoned by the faculty to illiterate and ignorant men, who have undertaken their administration as mere operators ; and, by their mismanagement, have often brought these agents into unmerited contempt and disuse. I shall, however, honourably persevere in the rule I

laid down from the first, in regard to patients who are sent to me by medical men for the administration of my remedies : in those cases I shall act only ministerially and conformably to their directions, and shall not interfere with their prescriptions and rules of diet, etc.; considering myself responsible only for the judicious application of those means which I am desired to administer. But when invalids consult me, or place themselves under my care, without the intervention of any medical adviser or medical attendant, which is the case with far the greater number of persons who resort to my aid, I feel myself doubly responsible, and am bound to suggest every means that may contribute to their rapid as well as perfect and permanent recovery. But why should the displeasure of physicians be pointed more against me for *gratuitously* recommending to my patients who are under a Galvanic course, or for suggesting to their medical attendants, the use of remedial means sanctioned by the pharmacopia and which I have, from

experience, found to co-operate most beneficially with Galvanism, than against surgeons, oculists, or aurists,—who, it is well known, generally receive fees not for operating only but also for prescribing.

As I have never felt a disposition to pursue any other branch of medical practice, I have confined myself to those philosophical agents to which I was first attracted by a love of science and a free choice, and not by imperative necessity. I have never made Galvanism a stepping-stone to notoriety, in order to gain connections from the general practitioner, but have always recommended patients, labouring under acute diseases to which my particular remedies are inapplicable, to those practitioners who were competent to treat them most successfully; being well acquainted with the professional characters and the practice of the physicians and surgeons of the metropolis.

Notwithstanding the many obstacles which have been opposed to my progress, I am happy to say that, after my long and

persevering efforts to establish the reputation of Galvanism as a constitutional remedy, many medical men of superior talents, scientific attainments and enlightened liberality, now support that practice which, at the commencement of my professional labours, they altogether disregarded, or honestly opposed. Yet an age will still be required thoroughly to subdue ignorance, prejudice and selfishness, and procure for Galvanism that extensive reputation to which it is entitled. To aid as far as I am able this most desirable object, I intend, from the suggestions of some of my intelligent patients and professional friends, to instruct medical pupils only who wish to practice Galvanism and my other philosophical remedies, in different parts of the united kingdom or abroad ; particularly those who are going to the East or West Indies, as Galvanism is peculiarly beneficial in chronic diseases of the liver, which are incident to hot climates.

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R E M A R K S  
ON THE  
AUXILIARY REMEDIES  
OCCASIONALLY USED IN AID OF  
GALVANISM.

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ELECTRICITY.

THIS powerful agent is frequently employed, both as a constitutional and local remedy, in those cases where a diluted and expansive influence and a mechanical force are required. I refer the reader to my treatise on Electricity, in which the subject is fully discussed under the following heads :—first, its etymology and definition ; second, its philosophical properties ; third, its laws ; fourth, its theory ; fifth, a description of the machine ; sixth, its medical properties ; seventh, the diseases to which it is applicable ; eighth, the cases in which singular recoveries have been effected, viz : in palsy, hysterics, spasm,

epilepsy, Saint Vitus's dance, tic douloureux, hypocondria, melancholy, chronic inflammation, gout, rheumatism, lumbago, sciatica and inflammation of the periosteum, jaundice, dropsy, disorders peculiar to females, hydrocele, scrofulous affections, ulcer, and diseases of the elbow, hip and knee joints : also in deafness, blindness, lameness, etc. : with remarks on the various modes of operation, viz :—insulation, current, friction, sparks, vibrations, shocks, and a peculiar method in which I combine the different modes of operation in order to act on the system, as well as on the diseased parts. Electricity is thus applied to infancy or old age without pain or inconvenience ; its curative powers are rendered so quickly beneficial that a fourth part of the applications will produce as much salutary effect as could be obtained from any other mode, however long continued.

With respect to insulation it may be necessary to observe, that it is an axiom

in philosophy, that no body can contain more than its natural capacity; thus if any fluid be poured into a vessel it can only contain the quantity that its dimensions will allow, and the superabundance will flow over. Apply this remark to Electrical insulation. When a patient is placed on an insulated chair or stool connected with a prime or positive conductor, he receives as much Electric matter as he can contain, and the superabundance escapes from the system to the earth by the conducting medium of the circumambient air, or by the hair of the head. To retard the escape of Electricity from the body during insulation, about eighteen years ago, I contrived an oil-silk covering of a semi-elliptical form to be placed on a patient during the operation. Insulation obtained by the circumvention of non-conducting substances, of any description whatever, or any construction, cannot be applicable to acute or inflammatory diseases; nor can such a mode of administering Electricity be a safe or beneficial operation in cases of

acute or organic disease, as consumption, cancer, etc., which fact is well known to medical men.

I am fully aware of the construction of those pointed and circular metals, which are intended to be used as conductors in the relief or cure of some constitutional and local diseases, and which evidently act on an Electro-Galvanic principle, and may be considered as positive or negative conductors of animal Electricity. These simple apparatuses, which develop so small a portion of the Electro-Galvanic influence, may, in some slight cases, be useful ; but it must be evident, that a single simple circle of Galvanism cannot, according to the nature of things, be put into competition with the combined power of a number of simple circles in a Galvanic battery. Negative conductors, however, I sometimes recommend when positive Galvanism does not apply.

The operation of Zin King or acupunc-

turation by a long needle, a painful and dangerous remedy commonly used in China, has been recently practised in this country in some cases of rheumatism, arising from external causes. The relief immediately afforded can only be accounted for on an Electro-Galvanic principle. The benefit appears to me to be obtained from the accumulated animal Electricity being passed off by the conducting power of the metallic point, and not from a vascular depletion, or a structural change.

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NITRO-MURIATIC ACID-BATH,  
OR SPONGING.

This remedy is nearly allied to, and may be considered a species of, Galvanism; because I conceive it acts on a Galvanic principle, and under that law of Galvanic excitation, which requires two dissimilar fluids and an interposed substance to develop its influence. The external application of the combined and

diluted mineral acids, the cutis and cuticle, with the circulating fluids of the body, form the double combination of fluid and solid necessary to the development of that elementary principle; which, in many cases, acts almost instantaneously, and produces nearly similar sensations and effects on the nervous and glandular system as the Galvanic fluid. From my experience of the comparative powers of the combined acids and Galvanism, I conclude it to be a modification of Galvanism. Soon after the introduction of this remedy, as a substitute for mercury, by the late Dr. Scott, it was strongly opposed by many of the profession; but I am satisfied that, in obstructions of the liver and gall ducts, it is an useful means and much safer than mercury, but not so effectual as Galvanism. The internal exhibition of the combined acids called chlorine, in appropriate cases of liver complaint and in siphilitic affections, has also been as beneficial as the Bath or Sponging, both of which are now sanctioned or employed by the highest medical

authorities. The Nitro-Muriatic Acid-Baths and chlorine should not, however, be indiscriminately used, nor be prescribed on general principles; much greater discretion is necessary in their use than in that of Galvanism, because they are not so safe in their action on the system, nor so mild in their operation on the disease.

It is, therefore, only to those patients, who could not go through a Galvanic course, that I have recommended this mode of treatment, in preference to a mercurial course: and I have, in some instances, seen many good effects produced by its use, in obstructions of the liver and gall ducts; but, in torpid liver and stomach complaints, it has failed to produce such beneficial results.

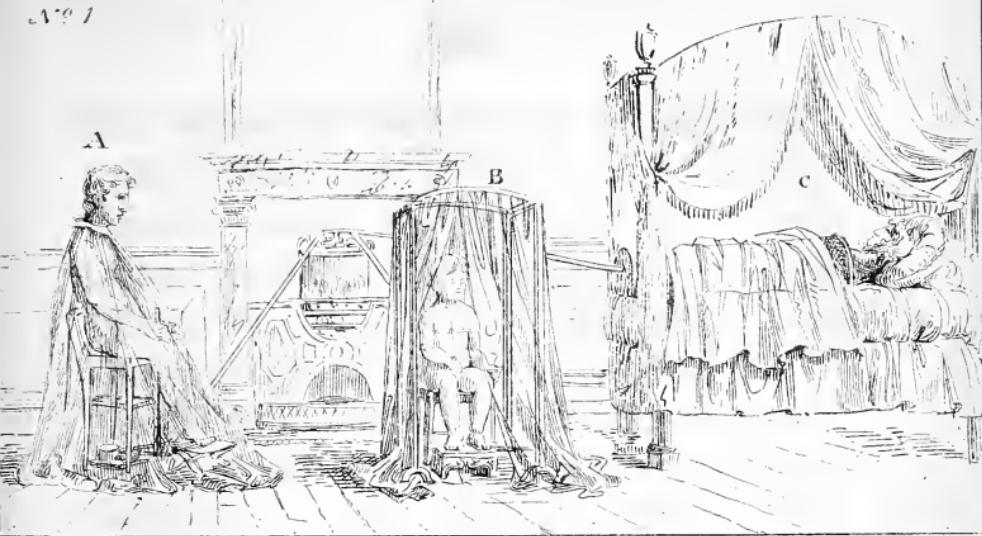
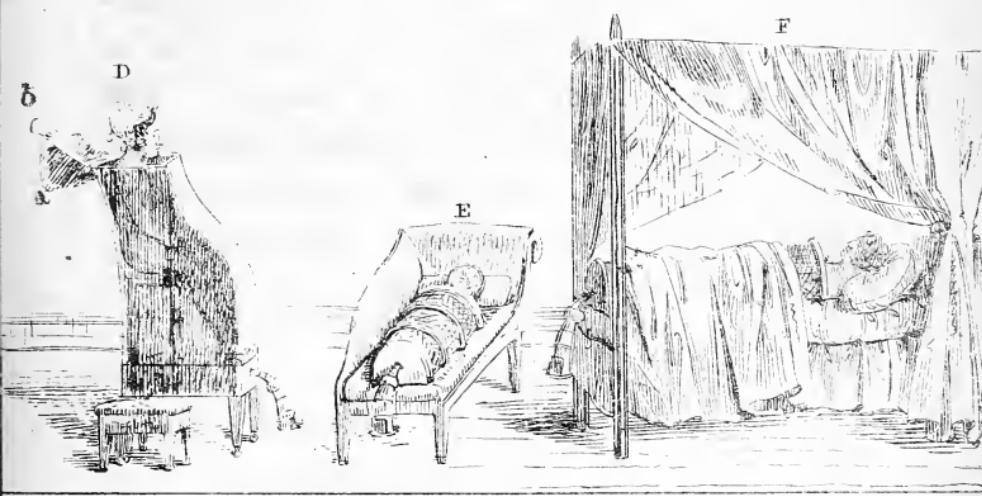
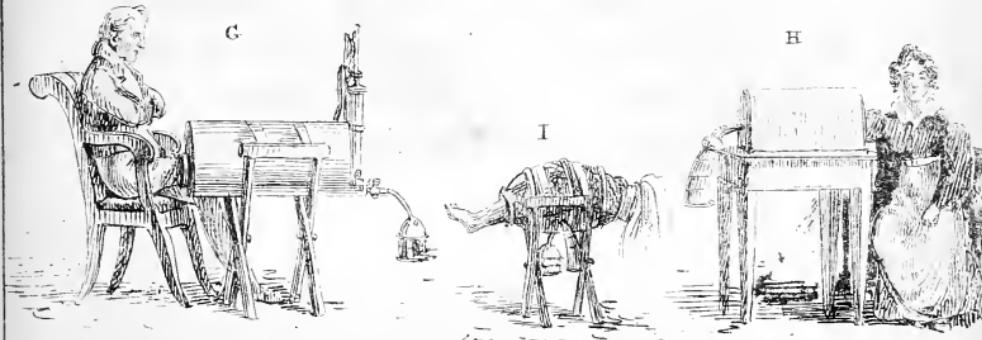
Very nearly allied to sponging with mineral acid is sponging with diluted vegetable acid, as vinegar and water. This remedy was strongly recommended by Dr. Stewart to those patients, whose lungs

were delicate and subject to colds and coughs. I have also, in many cases of disease of the abdominal and thoracic viscera, advised the sponging of the throat, chest, abdomen, etc., with the diluted acetic acid, which is preferable to vinegar and water, on account of its not discolouring the skin ; and the greatest advantage has resulted from its use as a preventive means,—fortifying the chest against sudden chills, and invigorating the parts of the system most liable to disease. The beneficial effects of a diluted vegetable acid, applied to the skin, may be as properly referred to Galvanic agency as that of combined mineral acids.

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#### THE GENERAL VAPOUR-BATH.

The portable Bath which I employ in my practice was the invention of a gentleman of great mechanical ingenuity, and has been very materially improved by the

A<sup>o</sup> 1A<sup>o</sup> 2.A<sup>o</sup> 3.



Hon. Basil Cochrane and myself. The construction of this Bath is very simple, and it can be immediately employed in urgent cases, at home or abroad, and near the bed or in the bed of the sick, without any inconvenience or danger. The apparatus consists of a boiler, tubes, stop-cocks and regulator, by which the temperature of the vapour to the lower extremities can be made twenty or thirty degrees greater than that of the vapour applied to the upper extremities; a point of the *greatest* importance, which cannot be accomplished by any other mode, except by the patent disperser. A portable tent or steam-proof covering, a chair and stool, are all the appendages of this incomparable Bath. The *regulation* of the temperature is essentially necessary for the safety of those patients who are liable to a vascular fulness, or determination of blood to the head; for many persons, who have resorted to the common Vapour-Bath, have experienced the most injurious effects, because the head was subjected to the same degree of heat as

the feet; and to some, the Vapour-Bath, from this radical defect in its construction, has proved fatal.

The medical power of vapour, as a sedative and stimulant, are as well known to practitioners, as its sudorific and tonic effects are to the invalid. The luxurious sensations it affords, from the quieting effects on the nervous system and its purifying effects on the skin, are also a great recommendation to its use as a *domestic* remedy; for there is no single function of the vital organs, on which the general health depends more than on that of the healthy state of the skin. The General Vapour-Bath is particularly and beneficially applicable in the first stages of fever, in acute inflammation of stomach, liver, bowels and other organs, in gout, rheumatism, gravel, dropsy, scrofula, as well as in chronic diseases of the abdominal viscera, obstructions in the gall-ducts, torpor of the liver and bowels, palsy, enfeebled and diseased joints, obstruction of perspi-

ration, cutaneous disorders, and the complaints peculiar to children and females.

In many of these cases I have employed the Vapour-Bath as an auxiliary with the best effects, and have seen extraordinary results from the combined use of Galvanism and the Vapour-Bath, which has accomplished recovery from chronic diseases, of many years continuance, in a shorter time than could have been expected. I cannot give in the appendix many distinct cases of the *separate* use of the General Vapour-Bath, as my object has not been to make experiments on the comparative powers of different remedies whose reputation is well established, but to combine every means to effect a rapid and permanent restoration of health.—The same apparatus is used as a local Vapour-Bath, in many affections, with the greatest benefit.

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## THE PORTABLE SUDATORY.

This machine is a general warm Air-Bath, which I have constructed, capable of being applied to patients at their own houses and in bed; it is one of the most efficacious remedies that has ever been introduced into medical practice. The apparatus is particularly light, and may be conveyed by hand with the greatest facility. This Bath is atmospheric air heated by artificial means, regulated by a thermometer to a certain temperature, and is introduced to the patient, under the bed-clothes, as he lies in bed in the most agreeable position. The immediate effect is a genial glow, ascending gradually from the feet to the head, which imparts to the patient a luxurious sensation, and invariably produces copious perspiration.

The Portable Sudatory acts in the most eligible and prompt manner, by throwing into the system a certain degree of heat to

increase and equalize circulation, relax the vessels of the skin and produce perspiration, by which means it removes those obstructions which occasion and perpetuate disease. The convenience of this remedy is obvious, and its form proves it to be the best means hitherto devised for prompt application in cases of emergency.

The singular efficacy of this Portable Sudatory is its chief recommendation, and the cases in the appendix will shew, that the most beneficial effects have been produced by its employment in the most desperate cases of disease. Not only *instantaneous* relief from pain has been afforded, but a *new action* has been given to the system, by only *one* application of the remedy which has led to rapid and lasting recovery from the most dangerous complaints. The Sudatory is an invaluable remedy in a variety of cases. I have employed its powers in gout, rheumatism, palsy, dropsy, cutaneous eruptions, and many other disorders with decided benefit.

I have found it *invariably* succeed in restoring the vigour of circulation; in diffusing animal heat; in promoting not only the secretion of the skin, but that of the kidneys and bowels; in removing obstructions, and affording *instant relief* from pain. In the numerous cases to which I have applied it, and few cases require more than one application, I have never known it to disappoint my expectations. *In no case whatever, in my practice, has it once failed.* The facts which shall be adduced, should convince any candid medical man that the powers of the Portable Sudatory are superior to any other means that can be employed in cases of emergency.

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#### AIR-PUMP VAPOUR-BATH.

The Air-Pump Vapour-Bath consists of several parts: a metallic cylinder or vessel into which the disordered limb is to be placed; at the extremity of which a bladder is attached to prevent the steam from

escaping, and the air from rushing into the machine, during the process of exhaustion. At the other end of the vessel is placed a stop-cock and tube, to which a small boiler containing water is affixed ; the steam from thence passes into the machine through the stop-cock, and the fluid evaporates by a spirit-lamp placed under the boiler. A thermometer shews the temperature of the fomentation, and regulates the degree of heat. An Air-Pump is firmly attached for the purpose of exhausting the machine when the fomentation has continued the proper time ; and there is also an escape-valve, with which is connected a flexible pipe, adapted to convey off the vitiated air occasioned by the nature of the complaint sought to be remedied. There is also another stop-cock to prevent the valves of the pump being injured by the hot vapour, in its passage from the boiler.

Each application of the apparatus takes up generally about an hour. The sensa-

tions experienced by the patient, during the process, are of the most agreeable kind. Even in painfully acute disorders the feelings, while under the operation, are actually soothing, exciting gradually and gently an inclination in the patient to sleep. The exhaustion, when carried to its fullest extent, awakens no other feeling than a sense of weight, and of a distention of the limb on which the operation is directed. When this is experienced, the application is terminated, by the admission of air into the body of the vessel, which affords instant relief. In short, the effects produced on the patient by the application of the *Air-Pump Vapour-Bath*, are mild, safe and efficacious, and afford relief in the very worst forms of disease, even after all other remedies have been tried in vain.

The apparatus comprehends, and for the first time unites the effects of fomentation and the cupping-glass, two of the most powerful means of acting on disease, and that on a plan more extensive than was

ever before thought of, and is particularly applicable to gout, rheumatism, palsy, contractions of the muscles, cutaneous and other diseases, particularly of the chronic kind. The peculiar construction of the machine is adapted to the leg or arm only, but the principle extends to the removal of atmospheric pressure from a surface, every square inch of which sustains a weight of fifteen pounds ; the effects on the vessels circulating the fluids in such parts are evident ; and the consequent temporary expansion of those vessels, from so great a pressure being removed, must give an opportunity for obstructions to give way, while at the same time the progress of inflammation is arrested, and symptomatic fever and the destruction of parts, consequent on suppuration, are avoided.

It is certain that the removal of the atmospheric pressure is, in many cases, attended with the most salutary effects, in helping obstructed vessels to unload themselves, not only in local affections of the

extremities, but also of other parts of the body, where obstructions may have taken place. The late learned and ingenious Dr. Garnett was so much struck with this discovery, that he procured and exhibited one of the machines, which he explained in his lecture on gout, in his interesting course on Zoonomia. Professor Hufeland has elicited the attention of the faculty at Berlin to this remedy, by his warm expressions in favour of its use in several of the diseases in which I have employed it most successfully.

Since these valuable testimonials, the Air-Pump Vapour-Bath has received various and important improvements; and its extraordinary efficacy in the relief and cure of many dangerous disorders has induced the faculty to recommend it; and I have more fully illustrated its use in my treatise on this machine.\*

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\* See the advertisement at the end of the book.

## THE LOCAL SUDATORY.

This portable apparatus is of a semi-oval form, sufficiently spacious to admit a part or the whole of a limb for the application of warm air, which may be impregnated with aromatics, sulphur, camphor or any other drug. The principle on which this machine acts is precisely the same as the Portable Sudatory, or General Warm-Air Bath. In those cases, to which the Local Vapour-Bath and the Air-Pump Vapour-Bath do not apply, and in which it is necessary to produce a copious perspiration in a diseased limb, the effects of this Bath may always be depended upon, as it invariably accomplishes that object. The administration of this auxiliary remedy will always restore the balance of circulation in a benumbed or wasting limb, by determining the blood to the surface, by affording immediate ease from pain, and by relieving the vascular fullness without a general excitement of the system. This apparatus and two others

for the application of dry and moist heat to the chest, the stomach, bowels and feet, are constructed on the most simple principles, and have been found most advantageous in my practice.

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#### TOPICAL BLEEDING, ETC.

As local congestion, from vascular fulness, will not sometimes yield to the sanative powers of internal remedies, but act mechanically as an impediment to the flow of nervous influence from the brain to the parts apparently diseased, the topical abstraction of blood or serum by leeches, cupping, or blisters, I have sometimes directed as a preparative to a course of Galvanism, etc. These surgical means are never required but in those cases where the brain, liver or other organs are gorged with blood or lymph, and where a high degree of chronic inflammation assumes the character of acute disease.

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## EXERCISE, ACTION, FRICTION, ETC.

That mechanical as well as chymical means are often essentially serviceable, in inducing a healthy state of the system or of diseased parts, cannot be denied; I therefore think it expedient, on proper occasions, to suggest to my patients the use of such active and passive exercises, by which the agility and strength of the muscles are surprisingly increased; as carriage, horse or foot exercise. I also occasionally recommend mechanical or manual excitement, which gives tone to the vascular and muscular systems, prevents or restores the loss of substance in paralized limbs, reduces the enlargement of diseased joints, and removes the torpor of the adjacent nerves. Such beneficial results have been obtained under my directions, that I am authorised in recommending these means, in appropriate cases of chronic disease, for the establishment and preservation of corporeal health and vigour.

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## A NEW APPARATUS.

As the mechanical power of Steam is now duly appreciated, and as the medical properties of the Vapour-Bath are better understood, it must be allowed, that the introduction of caloric into the system by moist heat is the safest and most useful means of relieving and curing many dangerous diseases. The inhalation of vapour, the fumes of tar, and other substances have been employed or recommended by the most scientific and experienced practitioners of the age, with the greatest success, in diseases of the chest,—why should not the *internal* exhibition of vapour and fumes produce as great benefit in the dangerous disorders of the abdominal visera, as in those of the thoracic viscera ?

This new suggestion of calling into use a most powerful chymical and mechanical agent to mitigate and cure acute disorders, which, if not removed, soon prove fatal,

opens a wide field for experiment and observation. Reflecting on the extraordinary cures of *internal* diseases, which have been effected by the medical powers of simple Vapour *externally* employed, I am decidedly of opinion, that the *internal* exhibition of this accredited and potent remedy will accomplish far greater good in cases, which injections and other means cannot reach. I have, therefore, been led to invent and construct an inexpensive apparatus, on a new and simple plan, for the internal administration of Vapour to the intestinal canal, the bladder, and the uterus. This small and convenient machine is so portable that it can be conveyed in the coat pocket without the least risk of damage, and is so easy of application, that it can be employed either by the practitioner, the nurse or the patient himself; it excites only pleasurable feelings and can be used with perfect safety, for the temperature of the Vapour can be constantly regulated by the unerring test of individual sensibility.

As I intend to publish a small pamphlet on this important subject, in which I shall elucidate the construction of the machine by a plate, enumerate the cases in which it is beneficially applicable, and give suitable directions for its use, I have here only to add, that I anticipate from its employment the greatest advantages in acute and chronic diseases, difficult parturition, and suspended animation; and that the success which will attend this improvement in the application of vapour will be highly beneficial to mankind. The introduction of this machine to public notice will also be still more gratifying to me, as it will be used under the direction of gentlemen of the medical profession.\*

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\* Country practitioners, who wish to employ Galvanism, Electricity, etc., in private or dispensary practice, may obtain from my manufacturer machines constructed on my plan, with directions for their use, by addressing a letter to me, *post paid*.

# NEW GALVANIC BATTERIES, INVENTED BY THE AUTHOR.

(*Vide Frontispiece.*)

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Plate 1.—The object of this Battery is to increase the Galvanic power, *ad libitum*, and to continue it for a great length of time, without any fresh excitation. These most desirable results are effected by a metallic and a semi-metallic substance, combined with another less oxydable metal, the surfaces of which are acted on by one or two mineral acids diluted with pure water. The power and duration obtained by these means are very great, though contrary to the hitherto acknowledged laws of Galvanism, which require two dissimilar metals and one interposed fluid to develop the Galvanic influence. This apparatus is designed for philosophical experiments on animals, and for the use of an operator in full practice. It is not only capable of increased power, but, by a simple contrivance, it perpetuates its action to almost any length of time for a succession of operations; these advantages are obtained by the shape and position of the plates; for, instead of being square and stationary, as in the common Battery, they are circular and made to revolve on an axis at the will of the operator. As only one segment of the circle is used at one time, four different operations may be effected in each revolution of the entire circle, without the trouble of wiping any part of

the circle. A constant stream of Galvanic fluid may thus be exhibited almost *ad infinitum*, and the unpleasant effluvia arising from the frequent addition of acid, as in the common mode, is prevented. The apparatus, being concealed from view in a handsome covered box, cannot give alarm to the most timid patient. The greatest facility is afforded in removing the oxyd from the surfaces of the plates by a few revolutions round its axis, and the virtue of the acid solution in the cells remains in full strength for a very long time.

*A description of Plate 1.*

1. The Galvanic Battery, as it appears on the table when placed before the operator.
2. Ditto with the cover open, shewing one half of the circular plates.
3. The series of plates out of the box.
4. The box with the crystal cells, which contain the acid.
5. A box without cells, for the purpose of resting the plates while the oxyd is removed from the surfaces by a knife during their revolution on the axis, which is made by turning a handle fixed at one end. This box is also useful in washing the Battery and keeping it clean. After the water is thrown out of the box, the Battery is replaced in it, and the cover put on to prevent dust from lodging on the plates.
6. The apparatus, as the directors, conductors, etc., on a new principle.

No. 2.—*A portable Galvanic Battery.*—This box contains four series of plates, and four divisions made with pieces of crystal and baked wood, which are interposed to divide the box for the plates; the ends of each series are connected by a hole in the plates, as *a*, *b*, *c*, *d*, so that a connecting wire is not required. *E* is the space for a bottle of acid. The inside of the box-cover contains the apparatus necessary for the Galvanic operation. By a few simple directions the Battery may be preserved in good order for some months, or even years. The cover, after the apparatus is taken out of it, is placed on the box, and, sliding into a groove, is fastened by a pin.

No. 3.—*Another portable Galvanic Battery*; for suspended animation.—This apparatus possesses a very great Galvanic power in a small compass, and its action can be perpetuated for as long a time as may be necessary, which is accomplished by the combination of different metals. It consists of three or four hundred plates in a box about three feet long, three inches deep, and three inches wide; the circular plates are about the size of half a crown, and, when the apparatus is taken out, the box is filled with diluted nitric acid, and the row of stringed plates is placed horizontally on the two supports of the Battery.

No. 4.—*A third portable Galvanic Battery*, intended to be used in suspended animation from drowning, etc.—It is contained in a walking-stick, for the

convenience of town or country practitioners when no conveyance can be immediately obtained for a larger Battery. This Galvanic apparatus is contained in a hollow stick, with three divisions; the first division contains a bottle of acid, salt and linen rag, covered by a metal cap affixed to the handle of the stick, and which is to be used as a cup to mix the acid with water. The second division is composed of two parts, one sliding on the other by means of a groove; when opened, it forms a pair of Galvanic Batteries of three or four hundred plates of combined metal, which are connected together by an arched wire. The third division, which is the smaller end of the stick, contains a small lancet, the conducting wires, etc., and is also held by the hand during the operation. This stick contains all that is necessary for the Galvanic process except water, which can be obtained on the spot. The power of this Battery is rendered equal to the following, No. 5, by the combination of the plates, the strength of the acid, and the horizontal position of the plates, which prevents the circuit of communication being formed by the expressed moisture of the interposed cloths, which must result from a perpendicular position of the pensile pile, as invented by Professor Aldini, and improved by Dr. de Sanctis. This objection to the professor's Battery I pointed out to him while we were making experiments together during his residence in London.\*

\* It was a great gratification to me to be favoured with the friendship of the nephew of the celebrated Galvani, during

No. 5.—*The most portable Battery* consists of a series of plates of the form and size of a shilling or a sixpence; each pair being intersected by a piece of cloth, on the principle of Professor Aldini; and this Battery is more powerful than his, because I combine the semimetal with one of the other metals. This Battery consists of two or three hundred plates, which may be conveyed in a pocket.

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his visit to this country. As Professor Aldini not only witnessed but much approved of the modes in which I administered Galvanism to my patients, and as I highly value his commendation of my practice, I subjoin the following testimonial, extracted from his very valuable work on Suspended Animation:—“Mr. La Beaume, who is well known for his exertions in the cause of Galvanism, has particularly directed his attention to cases of asthma; and the public testimonials he has received from his patients prove the happy results of such an application. I have myself been a witness of the precautions used in applying this remedy, and it is my intention to publish separately the interesting observations offered me by him on this subject.”—*General Views of the application of Galvanism to Medical Purposes, principally in cases of Suspended Animation. By John Aldini, Professor of the University of Belogna, &c. &c.*—It is but justice to Professor Aldini to say, that he came to England for the purpose of rendering Galvanism more effective in suspended animation, and that he zealously pursued that object by making many experiments before the Duke of Sussex, and other members of the Royal Humane Society, at his own expense and with great personal inconvenience.

## VAPOUR AND WARM-AIR BATH.

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In plate No. 2 are given representations of the administration of my local vapour and warm-air baths.

### PLATE 3, No. 1.

- A. Represents a man receiving the general vapour-bath in a sitting posture, and covered with a steam-proof cloak, without subjecting the head to the action of the vapour.
- B. A child sitting under a canopy, by means of which the vapour is internally as well as externally applied.
- C. A woman lying in bed, with a steam-proof apparatus placed over the body, by which the vapour is administered as far as the neck. By drawing out one of the divisions of the machine, the head may be placed under the apparatus so as to subject it to the action of the vapour, and by which means the vapour may be received internally.

### PLATE 3, No. 2.

- D. Represents a female figure sitting in the sudatory for the exhibition of warm air impregnated, if necessary, with aromatic or medicated fumes, as camphor, etc.; *a.* represents the cover to be placed over the head when it is necessary to submit it to the action of the warm air, and the tube *b*, in that case, is to be held by the patient that she may breathe the external air.

- E. A child lying on a couch undergoing the same process.
- F. A man in bed receiving the warm-air or medicated bath with his clothes on, as was the case of a patient apparently dying from apoplexy.

When these remedies are employed in bed, the bed-clothes are thrown over the telescope frame, which is here exhibited without the covering, in order to shew the apparatus more clearly.

#### PLATE 3, No. 3.

- G. Represents a man receiving the administration of the air-pump vapour-bath to his leg while he is sitting on a chair.
- H. A man reclining on a couch, to whom the local warm-air or medicated bath is administered.
- I. A local vapour or warm-air bath, to be administered to the knee or elbow ; which may be also used to the hand or foot only, by closing one of the divisions. This apparatus may be placed on a table, chair, sofa or bed.

These baths and their appendages are so portable that they may be most easily conveyed to the houses of invalids, and be promptly administered in urgent cases, though I generally employ them at home, under my immediate direction, having male and female attendants, well versed in their application, and rooms appropriated for that purpose.

As I have frequently had occasion to recommend foot-baths, the application of dry heat to the lower extremities, fomentations and eneymas, as well as useful attire calculated to protect delicate invalids from cold and damp weather, all of which are occasionally useful in affording support or relief in the progress of my curative treatment, I have invented the following apparatuses, which are more easy, convenient, and effectual in their application than those commonly used. They are founded on philosophical and mechanical principles, and most fully answer the ends proposed.

1.—*Pedeluvium*, a machine on an improved plan, for the more easy and effectual application of a hot-water bath to the legs.

2.—*A chauffe-pied*, for the use of invalids subject to cold in the extremities; intended to be used as a foot-stool in a room, in a carriage or in bed.

3.—Three injecting apparatuses, on an improved plan; which are unexpensive, cleanly and easy of application, and are capable of being promptly applied by patients themselves or their nurses. The first is made of a metallic substance, and may be conveyed in a coat pocket: the second is made of glass, and is still more portable: and the third is made of water-proof materials, with flexible tubes, and may be contained in a small circular shaving box.—Besides those useful apparatuses, I have invented some articles of attire to defend the body from sudden chills, and to support the frame under mechanical pressure.

# COMMENDATIONS OF THE PHILOSOPHICAL AGENTS USED IN THE AUTHOR'S PRACTICE.

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As Galvanism and the auxiliary remedies which I employ in my practice are not so highly appreciated as their importance requires, and as they are not so confidently resorted to as they ought to be, from an apprehension of their being injudiciously exhibited, I am induced to present to my readers the following extracts from various medical journals, which convey the sentiments of the first medical writers of the day on the subjects of my philosophical remedies and my peculiar practice.

"Mr. La Beaume is well acquainted with what is known of Electricity and Galvanism, and is well informed respecting the physiology of the human body; and he evinces much discrimination and judgment in his mode of employing them. He has obtained results from these mea-

sures that shew them to be worthy of being more generally employed than practitioners in general are disposed to believe. Mr. La Beaume has adopted the employment of the remedies as a part of his duties ; and we feel much pleasure in being able to add our testimony to that of many of the most eminent medical practitioners, in favour of the excellence of his qualifications for the profession he has assumed ; but we think the public is much indebted to Mr. La Beaume for his meritorious exertions to place the use of those remedies in their proper sphere ; and that it should be a cause of much peculiar gratification to medical practitioners to know that they may resort to his aid, in cases where they consider those remedies applicable, with the assurance that their advice will be conformed to in a judicious manner, and with confidence that they so far consign their patients to the care of a gentleman of liberal education, whose conduct has done honour to his profession.”—*The London Medical and Physical Journal* for June 1820. No. 256, page 503.

“Mr. La Beaume ranks deservedly high ; he has made many observations upon the influence of Galvanism and Electricity on the human body, which are exceedingly interesting and

important."—*The Medical Intelligencer*, No. 4, for February 1820.

"The practice adopted by Mr. La Beaume is highly respectable, and the thanks of the profession and of the public are equally due to him, for taking up a remedy (Galvanism) which has been much neglected, and by those members of the profession who are acquainted with it, and capable of appreciating its merits, from a knowledge of the animal economy, is allowed to be a most important one."—*The Monthly Gazette of Health*, for November, 1818, page 1085.

"We esteem it a most fortunate event, that Mr. La Beaume, whose abilities and assiduity eminently qualify him for the undertaking, should have directed his attention to this important branch of the healing art (Galvanism)."—*The Gazette of Health*, for June, 1820, page 535.

"Mr. La Beaume, it appears, has for a considerable time past, employed the Galvanic fluid as a substitute for mercurial remedies, in stomach and liver complaints, with great success."—*The Monthly Gazette of Health*, for April, 1820.

“Electricity is the powerful agent employed by the God of nature, to effect its greatest wonders. The elicited vital spark, *judiciously applied*, revives and invigorates the declining frame, arresting the progress of disease, and augmenting the mass of human felicity.”—*European Magazine, for January, 1820, page 58.*

“The use of the air-pump vapour-bath was proposed several years since by a physician of considerable talents, who at the same time adduced satisfactory evidence of its powerful efficacy; but he seems to have evinced more zeal in its favour than his contemporaries were disposed to participate with him; and this remedy, which, reasoning *a priori*, would lead us to expect great effects, had become almost totally neglected in England; not from its having failed to produce what it was stated to be qualified to do, but absolutely from the want of a proper trial of its powers. It has, however, been adopted by other nations; the French commonly resort to it; and Professor Hufeland, of Berlin, has lately endeavoured (in the *Journal der Practischen Heilkunde*, Mai 1819) to elicit the attention of the faculty more generally to this remedy, by his warm expressions in favour of its use in several

of the affections for which Mr. La Beaume has also employed it with the most gratifying, and often extraordinary results. The great efficacy of the vapour-bath, either partial or general, in many diseases, has been universally acknowledged: now this apparatus combines with the measure, just indicated, the power of producing a rarefied atmosphere round the whole or part of any of the limbs, to an extent that may be easily regulated according to our desire, and which may also be maintained for an indefinite period. The chief objection to the use of it, amongst the two higher ranks of the profession especially, is the necessity that some person well acquainted with the principles of its action, and possessing some knowledge of physiology, should superintend the application of it. Physicians cannot do this; and surgeons have not the inclination, even had they sufficient leisure. This objection is now obviated as far as the practitioners of London are concerned."—*The London Medical and Physical Journal*, for June, 1820. No. 256, page 503.

"We must do Mr. La Beaume the justice to say, that neither in this remedy, the Air-pump Vapour-bath, nor in Galvanism, does he trust

to its topical effects. Like a skilful physician, whose anxious wish is to cure his patients, he takes into consideration the state of the general health, and the peculiarities of the constitutions of his patients ; and it is in such hands only, that such powerful topical remedies can be employed with safety and effect.”—*The Monthly Gazette of Health, for December, 1819, page 365.*

“The Air-pump Vapour-bath is an ingenious and portable instrument, by means of which, the vapour of hot water or spirit is applied to a part of the body, and its efficacy heightened by the pressure of the atmosphere being taken off, by means of an exhausting syringe.”—*Medical Intelligencer, for June, 1820.*

“In the Sudatory we have a certain remedy for exciting perspiration without disordering the stomach by nauseating medicine. In typhus fever, gout, chronic rheumatism, diabetes, and all cases of local congestion or determinations of blood to any particular part of the body, we have no hesitation in saying, that the Sudatory is a most valuable invention.”—*The Monthly Gazette of Health, for December, 1822, No. 73, page 14.*

“It is, we think, sufficiently made out, that maladies are occasionally influenced by measures of an extraordinary nature, and both as it respects the Vapour-bath, and the various degrees and modifications of Electricity, testimony is too forcible in favour of their frequent utility to admit of rational doubt. Against every species of quackery, it is to be hoped, we shall ever be found the foremost in the ranks of oppositionists; but we do not subscribe to the position, that all who are not absolutely with us must necessarily be against us. Mr. La Beaume’s professions are widely different from those of the nostrum-monger; he lays claim to nothing beyond the fact which experience and practice cannot fail to give.” — *The London Medical Repository, Monthly Journal, and Review, for April, 1820,* page 308.

“We are very glad to see that a proper compliment is paid to Mr. La Beaume’s claim upon the profession, as an industrious man, of very gentlemanlike and honourable habits, who has deeply studied the remedies he professes to apply, and who is very competent to decide in what cases they may be used with advantage, and in what they would be likely to produce injury. Since we made our former remarks upon Mr. La

Beaume's practice, we have had an opportunity of knowing him professionally, so that we can heartily join the Reviewers, in saying, "That it should be a cause of much peculiar gratification to medical practitioners, to know that they may resort to his aid in cases where they consider those remedies (the Air - pump Vapour - bath, Electricity, and Galvanism) applicable, with the assurance that their advice will be conformed to in a judicious manner, and, with confidence, that they so far consign their patients to the care of a gentleman of liberal education, whose conduct has done honour to his profession.'"—*The Medical Intelligencer, for June, 1820, page 186.*

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The author inserts the following list of works, which he has consulted, as they may be useful to those who desire to study more deeply the sciences of Galvanism, Electricity, etc.

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*Aloyii Galvani de viribus Electricitatis in motu musculari commentarius, cum Joannis Aldini dissertatione et notis.* Mutinæ 1792; *Sultz*, on the general Theory of Pleasure; *Fabroni*, on Metallic Irritation; *Fowler*, Experiments and Observations; *Plaff*, on the Phenomenon of Galvanism; *Aldini*, Experiments on Cold-blooded Animals; *Volta's Letter to Green*; *Berlinghiëri*, Letter to de la Metherie; *Berlinghiëri*, to the Philomathic Society; *Vassalli Eandi* to de la Metherie; *Humboldt*, Experiments and Observations on the Phenomenon of Galvanism; *Reinhold*, Dissertation on the Phenomenon of Galvanism; *Havack*, Illustrations of the Doctrines of Galvani; *Valli*, Experiments on Animal Electricity; *Munro*, Experiments on Animal Electricity; *Gautherot*, Experiments on Animal Electricity; *Tramsdorf*, Experiments on Animal Electricity; *Ritter*, Experiments on Animal Electricity; *Richerand*, New Elements of Physiology; *Cuvier*, Report on Galvanism; *Brugantelli*, Annals of Chymistry; *Halle's Report*; Literary Gazette No. 100; Encyclopædia Londinensis — Electricity; *Dr. Darwin*, Zoology; *Nicholson*, Reply to Volta; *Henry*, Experiments on the Voltaic Pile; *Priestley*, Experiments on Galvanism; *Davy's*, *Woclaston's*, *Moyes'*, and *Carpue's* Experiments on Galvanism; *Cuthbertson*, on Electricity and Galvanism; *Singer*, on Electricity and Galvanism; *Galvani*, Ideas of the Application of Galvanism to Medicine; *Humboldt*, Ideas on the Application of Galvanism to Practical Medicine; *Plaff*, on the Galvanic stimulus in the Treatment of Palsy of the Optic

Nerve, and on Cataract, etc.; *Grapenngiesser*, Communications on Medical Galvanism; *Sprenger*, on the Method of administering Galvanism in Deafness; Experiments made by the School of Medicine at Paris, in the Treatment of Diseases by Galvanism; *Maudytt's Memoirs* of the Royal Society of Paris; *Wells*, Remarks on Medical Galvanism; *Crawford*, on the Theory of Respiration; *Creve*, on Suspended Animation; *Heufland*, on the Danger of Precipitate Interment; *Henry*, Elements of Chymistry; *Munro's Anatomy*; *Baillie*, on Morbid Anatomy; *Haller*, on Physiology; *Darwin's Zoonomia*; *Plenck's Hygrology*; *Pemberton*, on the Abdominal Viscera; *Woodford*, on Dyspepsia; *Saunders*, on the Diseases of the Liver; *Mills*, on Liver Complaints; *Cooke*, on Nervous Disorders; *Trotter*, on the Nervous Temperament; *Rend*, on Melancholy; *Pinel*, on Insanity; *Saunders*, on Pulmonary Diseases; *Heberden*, on Angina Pectoris; *Bree*, on Disordered Respiration; *Gregory*, on Dropsy; *Mosman and Brandish*, on Scrofula; *Brodie*, on Diseased Joints; *Alibert*, sur les Maladies de la Peaux; *Willan*, on Cutaneous Diseases; *Johnson*, on Gout; *Belfour*, on Rheumatism; *Matthias*, on the Mercurial Disease; *Foote*, on Lues Venerea; *Robertson*, on the Generative System; *Underwood*, on the Diseases of Women and Children; *Cooper's* (Sir A.) Surgical Essays; *Abernethy's* Surgical Essays; *Hutchinson*, on Tic Douloureux; *Sanders*, on the Diseases of the Eye and the Ear; *Simpson*, on Hemeralopia; *Thomas's* Practice of Physic; *Willish*, on Diet; *Bichat*, sur la vie and la mort; *Reece*, on the Diseases of Hot Climates; *Coyne*, on the Nitro-Muriatic-Acid Bath; *Cochrane*, on Vapour Baths; *Clarke*, on Vapour Baths; *Gower*, on the Sudatory; *Mapleson*, on Cupping; *Tweedie*, on Exercise, etc.; *Clias*, on Action; *Bacot*, on Friction; *Creighton*, (Sir W.) on Inhalation, etc. in the Gazette of Health, No. 86.

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